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COVID-19 handling report for pre-case, case (pre-hospital and hospital), and post-case phases in the elderly as vulnerable populations in 6 Asia Pacific countries

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Abstract: In this current COVID-19 pandemic, the elderly (60 years and over) are more vulnerable populations to be infected and become victims. In a disaster cycle, the various parts are usually divided into three stages, consisting of the pre-impact stage, the trans-impact stage, and the post-impact stage. It is necessary to explain how to handle the COVID-19 disaster for the elderly at each step (explain the meaning of pre-case, case (pre-hospital and hospital), and post-case phases, respectively). This paper presents the handling of COVID-19 for elderly in pre-case, case, and post-case phases in six Asia-Pacific countries (Indonesia, Thailand, Singapore, Malaysia, Vietnam, and Japan). The data and information come from COVID-19 official websites of each country, including information from World Health Organization (WHO), United States Centers for Disease Control and Prevention (CDC), mass media, and professional associations. The handling of COVID-19 in the pre-case phase has been done correctly for the elderly, especially in Indonesia, Japan, Thailand, and Singapore. In the case phase (pre-hospital and hospital), only Indonesia, Japan, and Thailand have followed special handling protocols for the elderly, particularly for those who have comorbidities and respiratory diseases. For the post-case phase, all countries have the same treatment protocol for all age groups, with none specific for the elderly.

***Keywords*:** COVID-19, elderly, Asia Pacific, handling, risk

Introduction

COVID-19 is a disease caused by the SARS-CoV-2, with the first case appearing in Wuhan City, China, in December 2019. On Wednesday, 11 March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic after the virus spread rapidly all over the world. The initial statement about the pandemic was retrieved from the WHO website when COVID-19 had spread to 118 countries and had infected more than 121,564 people with at least 4,373 deaths in Asia, Europe, the Middle East, Africa, and America. As of 31 July 2020, there are over 17,064,064 cases in 215 countries, and 668,073 deaths have been reported from COVID-19 (*1*).

In Indonesia as of 8 August 2020, the fatality rate of COVID-19 in age group of 60 years and above is 18% and it is the highest and above all other age groups (*2*). In other Association of Southeast Asian Nations (ASEAN) countries such as Singapore, it is known as of 8 May 2020 that around 80% of deaths because of COVID-19 are above 60 years old (*3*).

In Malaysia, the incidence rate of COVID-19 is 13.4% for those aged above 60 as of 18 May 2020 (*4*). The fatalities that have been recorded so far show that 62.6% of the deaths are from those aged 60 years and above. Regarding comorbidity factors, it was found that 80.7% of the cases that ended in deaths had underlying chronic diseases, such as diabetes, high blood pressure, kidney disease, heart disease, *etc.* (*5*). In Thailand, data on incidence rates and fatality rates among the elderly is 43% (*6*). According to information provided by the Government Centre for COVID-19, although the elderly accounted for a small proportion of infections,

they comprised the highest number of fatalities (*7*). As of 5 August, 2020, there are 3,328 positive cases in Thailand, with 58 death (*1*).

The prevalence of COVID-19 cases in Japan is similar to that of Thailand. The Asahi Shimbun Digital analyzed the 22,230 infected cases, including 981 death cases up to 15 July 2020. It offered the following observation: 84% of deaths are from those over 70 years old, and 57% of total deaths are from those aged above 80 years. Furthermore, the mortality rate by age groups of the 50s, 60s, 70s, and over 80s is 1.0%, 4.7%, 14.2%, and 28.3% (*8*). Based on these data, we could conclude that the infection rate among senior citizens is not high; however, once infected, the likelihood of mortality in this age group is much higher.

Since the beginning of the COVID-19 pandemic, Vietnam had succeeded in dealing with the spread of the COVID-19. Because there is zero death case of COVID-19, and there are no new cases for 100 days since April 2020. But as of 31 July 2020, there was the first case of death, a man in 70 years old, and following the second death case in a man 63 years old. Per 10 August 2020, the positive of COVID-19 nearly 400 cases, and the number of death case is 10 cases which mostly the victim is an older adult (*9,10*).

Considering the above, it can be assumed that the elderly face higher risks of fatality compared to other age groups (*1-5,7,8*). The high rate of transmission of COVID-19 among the elderly is partly due to a decrease in the function of immune system because of aging and the possibility of the existence of other diseases as comorbidities. It makes the elderly more vulnerable to the COVID-19 pandemic (*9-13*). In a disaster cycle, the various parts are usually divided into three stages, consisting of the pre-impact stage, the trans-impact stage, and the post-impact stage. It is necessary to explain how to handle the COVID-19 disaster for the elderly at each step (explain the meaning of pre-case, case (pre-hospital and hospital), and post-case phases, respectively). Therefore, this paper presents the handling of COVID-19 for elderly in pre-case, case, and post-case phases in six Asia-Pacific countries (Indonesia, Thailand, Singapore, Malaysia, Vietnam, and Japan). An analysis of how each of these countries dealt with the elderly can serve as lessons learned by looking at the weaknesses and strengths of each country.

Literature review

This paper is a report on the handling of COVID-19 in the elderly populations in six Asia-Pacific countries. Considering that there has been so little research on the topic until now, the sources of literature and data for this paper mostly come from the COVID-19 official website of each country, including information from the WHO, CDC, mass media, and professional associations related to the elderly.

For Indonesia, the data and information were collected from the official website for COVID-19 (*covid19.go.id*) of the Ministry of Health, especially the website of the Directorate of Family Health that handles the elderly (*kesga.kemkes.go.id*), professional associations related to the elderly such as the Indonesian Medical Gerontology Association, and mass media.

Data and information for Singapore were collected from the official website for COVID-19 (*https://www.gov.sg/article/taking-care-of-our-seniors-amidst-covid-19*) and senior agency under the Minister of Health (*https://www.aic.sg*). For Thailand, the data and information were collected from the official website for COVID-19 (*https://ddc.moph.go.th*) and Thailand's national website for senior handling of COVID-19 in Thai language. Malaysian data and information were taken from the official website for COVID-19 (*http://covid-19.moh.gov.my*) and the website of the Ministry of Health. Data and information on Vietnam were taken from the national website for COVID-19 in the Vietnamese language. Data and information on Japan were taken from the official website for COVID-19 of the Ministry of Health, Labour, and Welfare (*https://www.mhlw.go.jp/index.html*), which were mostly in Japanese.

The handling of pre-case, case (pre-hospital and hospital), and post-case phases in the elderly in 6 Asia Pacific countries

In a disaster cycle, the various parts are usually divided into three stages, consisting of the pre-impact stage, the trans-impact stage, and the post-impact stage (*14*). Some describe it as the stage of disaster preparedness, the stage of emergency response, and the stage of disaster recovery. Similarly, it is necessary to explain how to handle the COVID-19 disaster for the elderly at each step as the pre-case phase, case phase which is further divided into pre-hospital and hospital stages, and the post-case phase, which is more about the handling of victims who recover or die.

The pre-case stage of the six Asia Pacific countries (Indonesia, Malaysia, Singapore, Thailand, Vietnam, and Japan), which became the scope of this study, found that all countries had provided promotive and preventive programs for COVID-19 for the elderly. The promotions and prevention programs were socialized using posters of guidelines or videos on how to prevent actions by the elderly's family members or caregivers if the elderly had symptoms such as those of COVID-19. Besides that, it was promoted how to conduct online health checks and routine medication taken by the elderly during this pandemic. All countries also have a hotline number for COVID-19. Promotive and preventive efforts are not only by the Ministry of Health or National COVID-19 team but also provided

by non-governmental organizations (NGOs) such as gerontology associations, elderly-friendly communities, and elderly specialized health care clinics.

Whereas in the case stage (pre-hospital and hospital), each country has its own specific set of procedures, but the treatment for all patients is not explicitly represented for the elderly. Only Indonesia, Japan, and Thailand provide particular protocols for the elderly with comorbidities and respiratory diseases, before being treated at the hospital. How treatment at the hospital proceeds has also been addressed by a specific protocol. Whereas in other countries, there is no information about pre-hospital and hospital-specific protocols for the elderly, because of limited published data, and absence of fatality cases due to COVID-19, such as in Vietnam.

The post case stage, is related to how to handle if elderly patients have recovered from COVID-19 or vice versa. The recovery protocol in all countries was the same after two consecutive polymerase chain reaction (PCR) tests had negative results, and the burial protocol for COVID-19 patients was the same in all countries, which continued to avoid direct contact with corpses. However, handling at this stage is not only specific to the elderly, but also applies to all patients. The guidelines and protocols developed for the elderly by each of the countries to deal with the three phases of the disease are represented in Table 1.

The elderly are a vulnerable population group due to a decrease in the body's ability, both physiologically and psychologically. Physiologically, there is a decline in the body's defence system among the elderly due to the ageing process. When a virus enters the body, the immune system should recognize the virus as a foreign object and work to destroy it. In old age, the production of white blood cells in the body is lower; so the ability to fight infections is also lower (*15*).

Previous study shows that if the immune response of older adults to SARS-1 is not successful, it is possible to have the same response to SARS-2 (*16,17*). Due to the ageing process, the ability and speed of the immune system in recognizing the pathogen are slower, less coordinated, and less efficient (*18*).

The immune system in the elderly also cannot distinguish between the infected virus cells and healthy cells. The immune system works uncontrollably so that it can attack even healthy cells; and it is called a cytokine storm (*19*). This condition can cause COVID-19 effects to become worse. In the elderly, antibodies do not work well. Even though the elderly generally produce the antibody to fight the virus, these antibodies do not work as well as they do among the young; and these antibodies are not able to stick to the virus and fight it. This also explains why diseases such as pneumonia or influenza often afflict the elderly and can pose fatal risks.

Psychologically, the elderly are more vulnerable to stress. The elderly undergo significant psychological changes due to the ageing process. This is triggered by decreasing functional capacity and separation from family members, such as children who prefer to stay away from parents often caused by death of one of the spouses. In addition, loneliness becomes a serious problem that triggers the emergence of depression in the elderly. As a result, the elderly are more vulnerable to stress and anxiety. In the atmosphere of the COVID-19 pandemic, many elderly experienced considerable mental stress due to isolation and social distancing (*20*). This condition is exacerbated by situations where the elderly cannot meet their children due to the implementation of social distancing and "lockdown" during the pandemic period.

Apart from having physiological and psychological impairments, the elderly comprise the age group with the highest COVID-19 fatalities due to underlying diseases or comorbidities. As people age, they experience an overall reduction in function due to degenerative processes that cause the emergence of various health problems, such as diabetes, hypertension, heart disease, stroke, and cancer. The data from 2018 notes that the elderly in Indonesia mostly have degenerative diseases and/or chronic health problems, such as diabetes and heart disease (*21*). Thus, the elderly are susceptible to serious complications if they contract the COVID-19. This is evidenced by the high prevalence of COVID-19 with serious complications and high mortality among the elderly (*22*). A study in China showed that people who suffer from one of these diseases will be at high risk for contracting COVID-19 and at risk of experiencing more severe complications (*23*). For example, the elderly with cancer have a weaker immune system, which is a side effect of chemotherapy and is commonly expressed as a form of immune system suppression. Similarly, patients with hypertension and heart disease will experience lung disorders caused by COVID-19, which will cause the heart to work harder to pump blood throughout the body. In the worst conditions, these complications can result in death.

An epidemic is a condition of increasing the number of diseases above normal expectations in a region (*24,25*), while a pandemic is an epidemic occurring throughout the world and in much larger numbers (*24-26*). Therefore, almost all countries that have positive cases of COVID-19 have declared the COVID-19 pandemic as a national disaster. Indonesia made the declaration on 13 April 2020 through the Presidential Decree (Keppres) of the Republic of Indonesia Number 12 of 2020. Japanese Prime Minister Shinzo Abe declared a national emergency in Japan due to soaring COVID-19 cases on 7 April 2020, especially for the cities of Tokyo and Osaka.

From the COVID-19 handling report for six Asia-Pacific countries, the handling of pre-cases has been done correctly for the elderly, especially in Indonesia,

Table 1. Handling report of COVID-19 for elderly patients in six Asia-Pacific countries

No.	Country	Pre-case	Case		Post-case (after discharge hospital)
			Pre-hospital	Hospital	
1	Indonesia (*27*)	The Ministry of Health requires the following: 1. Doing self-quarantine in the house. 2. Not allowed to meet family/relatives, especially those who are sick. 3. Not allowed to gather in the crowd. 4. Doing prayer from home. 5. Report to the nearest health facility if you experience COVID-19 symptoms. 6. Routine medical checkup in hospital replaced by online consultation. 7. Home delivery of drugs for the elderly who are on regular medication. 8. Carry out other provisions according to the protocol of the Ministry of Health.	1. Rapid tests and self-isolation for 14 days for the elderly with the status of people under control (ODP). 2. If the elderly with ODP status are comorbid (have other controlled disease), they will be isolated in COVID-19 Emergency Hospital. 3. Such people must go to COVID-19 Emergency Hospital using a private car/ facility from the nearest health services.	1. The elderly with ODP status who have positive rapid test results will be referred to the COVID-19 Referral Hospital for a swab test using the PCR method for repeated confirmations. 2. Elderly with the status of patient on monitoring (PDP) status are referred to COVID-19 Referral Hospital and swab tested. 3. If the result is positive for COVID-19, treatment will be carried out in the hospital. 4. If the result is negative, self-isolation for ODP will be carried out, but PDP will be isolated in the hospital for 14 days.	If the patient recovers: 1. After two consecutive negative swab tests. 2. The patient is discharged and follows self-isolation for 14 days at home. If the patient dies: 1. The body is wrapped in an airtight bag, and buried for a maximum of 4 hours. 2. Families who want to see are allowed to use complete personal protective equipment (PPE). 3. The medical team instructs the family regarding the rules and regulations that will need to be followed for the last rites.
In Indonesia, pre-case COVID-19 are categorised as follows (*27*): 1. ODP: There are fever (> 38°C) OR symptoms in upper respiratory tract infections; the patient has visited or lived in an area known to be a COVID-19 transmission area, and has had direct contact with a confirmed or probable COVID-19 case. 2. PDP: There are fever (> 38°C) AND symptoms in upper respiratory tract infections; the patient has visited or lived in an area known to be a COVID-19 transmission area, and has had direct contact with a confirmed or probable COVID-19 case.					
2	Japan (*28-30*)	1. The Japanese government declared a state of emergency for initially seven prefectures on 7 April 2020 and extended to all prefecture on 16 April 2020, asking residents to refrain from nonessential outings and some businesses to shut. 2. Initial target prefectures: Tokyo, Kanagawa, Saitama, Chiba, Osaka, Hyogo, Fukuoka. 3. Period: phased termination; until 14 May 2020 for most prefectures and finally until 25 May 2020 for remaining 5 prefectures, including Tokyo. 4. Travel restricted. 5. Schools closed. 6. Public facilities and mass-gathering events closed. 7. Observation of non pharmaceutical interventions: (a) Wearing a mask properly; (b) Cough manner; (c) Frequently washing your hands; (d) Physical Distancing. 8. Various guidelines and guidances for senior citizens, particularly those in long-term care facilities.	1. Anyone who had fever exceeding 37.5 degrees for more than four days with flu-like symptoms. 2. The temperature in the elderly exceeding 37.5 degrees for more than two days with a flu-like syndrome, and underlying comorbidities. 3. Anyone with severe fatigue and/or breathing difficulty. 4. They (Nos. 1, 2, & 3) should contact the Call Centre for assessment of PCR tests initially. The above indications were initially followed by public sectors but in view of accumulation of evidence such as asymptomatic cases, more liberal approach was gradually applied for high risk populations such as senior citizens.	1. All confirmed as the communicable disease control law hospitalizes PCR-positive cases. 2. If the empty beds are saturated, only symptomatic cases (cardiovascular, diabetic, cancer, pulmonary chronic, *etc.*) will be hospitalised. 3. Mild or asymptomatic cases were quarantined at home or designated residential facilities. 4. PCR-positive cases, presenting pneumonia, will be treated intensively: (a) Over 50 years of age with underlying health conditions; (b) Serious respiratory conditions regardless of age. 5. Treatment includes: (a) Respiratory assistance (including the use of ECMO); (b) Treatment with one of the four trial drugs. (with the consent of patients but some declined).	If the patient recovers: 1. When hospital beds are saturated, mild cases may be transferred to hired hotels. 2. Discharge after negative PCR test twice. If the patient death: 1. The body was cremated without family members. 2. This standard procedure was revised and softened.

Table 1. Handling report of COVID-19 for elderly patients in six Asia-Pacific countries (continued)

No.	Country	Pre-case	Case		Post-case (after discharge hospital)
			Pre-hospital	Hospital	
3	Vietnam (*31*)	1. Home self-quarantine instructions to prevent the spread of COVID-19 in the community (with video clip for illustrating). 2. Quarantine subjects (in hospitals or other quarantine places). 3. Persons without COVID-19 symptoms (cough, fever, difficulty breathing) and one of following criteria: (a) Staying in the same house, same area with confirmed case or exposed case (with symptoms of COVID-19); (b) Work with confirmed case or exposed case (with symptoms of COVID-19); (c) Travelling, going on business, entertaining group together with confirmed case or exposed case (with symptoms of COVID-19); (d) Close exposure within 2 metres to confirmed case or exposed case (with symptoms of COVID-19) in any condition; (e) Sitting in the same row or before or behind 2 lines at one car/train/airplane with confirmed case or exposed case; (f) Persons had visited China within 14 days from departure day in Vietnam.	F2: Person who exposed to F1 (a) Wearing face mask; (b) Inform to district health department where accommodating (to get instruction and COVID-19 laboratory test); (c) Ready with personal belongings, follow instruction from health department for quarantining (at the hospital or at home with laboratory test for COVID-19);. (d) Inform F3 persons about personal health conditions. F3: Persons who exposed to F2 (a) Wearing face mask; (b) Inform health department about current address (to get instruction or COVID-19 laboratory test); (c) Ready with personal belongings, follow instructions from health department for quarantining (at the hospital or at home); (d) Inform F4 persons about personal health conditions. F4: Persons exposed to F3 and F5: Persons exposed to F4 (a) Wearing face mask; (b) Self-quarantining at home; (c) Inform health department about current address (to obtain instructions); (d) Probable case or exposed case must update personal conditions of other Fs to health department for suitable treatment (or instructions) immediately; Even those with negative COVID-19 test required to remain in self-quarantine for 14 days.	F0: A confirmed case, person with positive laboratory test of SARS-CoV-2 with symptoms of respiratory diseases: (a) Cure by medical doctor; (b) Quarantine at the hospital; (c) Self-serving for reducing risk to other persons; (d) Inform F1 persons about personal health conditions. F1: Probable case or persons exposed to F0 (a) Wearing face mask; (b) Inform district health department about current address; (c) Ready with personal belongings (for quarantine and treatment at the hospital); (d) Inform F2 persons about personal health conditions.	F0 recovering after 2 consecutive negative COVID-19 test must remain in self-quarantine at home for 14 days.

Table 1. Handling report of COVID-19 for elderly patients in six Asia-Pacific countries (continued)

No.	Country	Pre-case	Case		Post-case (after discharge hospital)
			Pre-hospital	Hospital	
4	Malaysia (*32*)	There is a home sampling programme subject to conditions. The person must not be a patient under investigation (PUI) and should not have had a confirmed contact with an actual patient.	1. If someone experiences symptoms leading to the characteristics of PUI, immediately visit a screening center. 2. If someone is determined to be non-PUI, a screening test is conducted and the results are reported to the Regional Health Officer (PKD) and the person is put under house surveillance for 14 days. 3. If the sample test results are positive, the person is immediately determined as PUI and taken to the hospital. 4. If symptoms develop in test negative patients, they are immediately identified as PUI and taken to the hospital. 5. If after 14 days' home surveillance, there are no symptoms, the person is declared free from supervision, which is proven by a letter.	1. Elders with PUI status were immediately taken to the hospital. 2. If the patient's condition is stable, treatment and sampling are taken. If the sample results are negative, repeat samples are taken within 48 to 72 hours. If negative, patient can go home and remain for 14 days under home surveillance. 3. If the patient is unstable, the patient management procedure is confirmed.	1. If the patient shows recovery as evidenced by the results of the test, they may go home and remain under home surveillance for up to 14 days. 2. If the patient dies, burial is carried out according to protocol (Annex 20). If the patient dies, burial is carried out according to protocol (Annex 20).

Thailand, Japan, and Singapore, whereas the guidelines/ protocols issued by the governments in other countries (Malaysia and Vietnam) were the same as for the other age groups, with no special treatment for the elderly. In the case phase (pre-hospital and hospital), only Indonesia, Japan, and Thailand had particular handling protocols for the elderly, while for the post-case phase, all countries had the same treatment protocol for all age groups.

However, one of the most valuable lessons learned from Vietnam's handling of the pandemic is on how to arrange the tracing of contacts up to the fifth person who has had interactions with positive cases, so that the anticipation of transmission and spread of COVID-19 is reasonable and can be stopped immediately. Usually, tracing of COVID-19 only included other people who had interacted with the confirmed patient for the last 14 days. In a confirmed case, a person with a positive laboratory test of SARS-CoV-2 with symptoms of respiratory diseases (F0), they will find the persons (F1) that could be probable cases or persons exposed to F0. Also in Vietnam, tracing did not stop only at F1 but the tracing continues until the fifth person (F5). It defined that F2 is the person exposed to F1, F3 is the persons exposed to F2, F4 is the persons exposed to F3, and F5 is the persons exposed to F4.

Conclusion

Based on the research findings of this study, the elderly are highly susceptible to death from the COVID-19 pandemic. Therefore, special care is needed starting from the phase before being infected (pre-case), when there are symptoms of COVID-19, examination, and treatment, until returning home from the hospital (case), and after recovering from COVID-19 (post-case). Investigation of the six countries in the Asia-Pacific region, namely Indonesia, Malaysia, Singapore, Thailand, Vietnam, and Japan, revealed different protocols being followed in each of these. The pre-case phase that has been carried out by the six countries was already good. Many promotive and preventive activities for the elderly have been carried out. The guidelines and videos are not only for the elderly themselves but also for family members/caregivers who have a responsibility for them. For case stage (pre-hospital, hospital) not all countries have particular protocol handling COVID-19 specifically for the elderly. There should be a specific protocol starting when the elderly have symptoms of COVID-19 infection, continuing the examination, and how to treat. Then, the protocol should also be special treatment for the elderly with comorbidities and when elderly patients should be treated intensively in the ICU or given a ventilator. So, this is expected to reduce the fatality rate in elderly patients who are infected with COVID-19. The last stage is post case and that needs to have

Table 1. Handling report of COVID-19 for elderly patients in six Asia-Pacific countries (continued)

No.	Country	Pre-case	Case		Post-case (after discharge hospital)
			Pre-hospital	Hospital	
5	Thailand	General advice for elderly in Thailand for prevention of COVID-19 (*33*): 1. Wash hands correctly (picture and poster provided) with soap or alcohol gel or hand sanitiser before eating and after using toilet. 2. Avoid touching face especially eyes, mouth and nose. 3. If sharing food, use individual serving spoons. 4. Promoting health by regular exercise, sleep, rest, and stress reduction through suitable hobby. 5. If coughing or sneezing, use tissue paper to cover nose and mouth, then put it into a bag and close the bag before throwing it into a dustbin, and then wash hands. If there is no tissue paper or there is no time to use one, use arm (sleeve) to cover nose and mouth up to chin, then wash hands with soap or hand sanitiser. 6. Avoid staying close to people who have flu-like symptoms, such as fever, cough and sneeze, and a running nose. 7. Avoid going out of the house, especially in crowded areas. 8. If it is necessary to go out, people must cover nose and mouth with sanitary mask or facial mask. To stay out for the shortest period and keep distance with other people 1-2 metres (social distancing). 9. Avoid hugging, touching, or talking too close to other people. 10. Communicate with others using telephone and social media. 11. The elderly who have chronic diseases such as hypertension and diabetes should stock enough medicines to continue medication. To replenish stock, ask family members to help.	General advice for people who has Flu like symptoms (*34*): 1. Go to see the doctor or call COVID-19 hotline, the ambulance will pick up for an investigation. 2. Stay away from other people. 3. If fever develops, do not use ibuprofen, can use paracetamol. The guideline for patient care and investigation (*35,36*): 1. Separate suspect cases for investigation. 2. During interview, review medical record, physical examination such as chest X-ray and laboratory reports. 3. Collect specimen for SARS-CoV-2 for PCR. (a) Suspect cases with upper respiratoryinfection (URI), middle respiratory problem such as pneumonia, must do nasopharyngeal swab together with throat swab/oro- nasopharyngeal swab (b) If the result is negative and patient does not recover, repeat specimen collection for an investigation within 24 hours. (c) If necessary to admit patients for treatment in hospital for illnesses such as pneumonitis, they must be in a separate room (d) If mild or no symptoms, consider patients for home quarantine while waiting for laboratory results. (e) If patients can do home quarantine, hospital staff to provide information and instructions (f) If it is negative again, provide treatment for OPD (Obstructive Pulmonary Disease) for each symptom and advice patients to self-monitor for 14 days. (g) If the results are positive, admit patients for treatment and quarantine in hospital for every case.	Results positive (*36*): 1. Admit to IPD in single isolation room or cohort ward with only confirmed case by keeping distance between patients of at least 1 metre. 2. For patients in serious condition, consider performing aerosol generating procedure and put to AIIR 3. Provide anti-viral therapy. In case of patients with symptoms or results of film chest X-ray with lung spot and aged more than 60 years, it is a high-risk; together with patients with mild case, they will receive 3 medications for 5 days. Mild case: 1. Hydroxychloroquine or chloroquine; 2. Darunavir + ritonavir or lopinavir/ritonavir; 3. Azithromycin[#] If film chest X-ray worsens, consider adding favipiravir for 5-10 days (depends on clinical sign and symptoms).	In case of death (*37*): 1. Put in zip bag double layer, label with signal and coated with antiseptic outside bag. 2. Send to the post-mortem department as standard. 3. No ceremonials (watering in corpse hand/ bath ceremony) and not allowed to open the bag to see the body. 4. In confirmed cases of COVID-19, it is strictly prohibited to open the bag. In case of cure and discharge from the hospital: 1. Advise patients to wear face mask, practice health promotion and sanitation, and prevent spreading the disease for 30 days. 2. Discharge without repeating swab.

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Table 1. Handling report of COVID-19 for elderly patients in six Asia-Pacific countries (continued)

No.	Country	Pre-case	Case		Post-case (after discharge hospital)
			Pre-hospital	Hospital	
6	Singapore (*38,39*)	We should advise the seniors in our family: 1. Senior citizens should practice safe distancing. 2. They should do social distancing to avoid crowded places as far as possible. 3. Maintaining good personal hygiene: washing their hands frequently and avoiding touching their face, especially the eyes, nose, and mouth. 4. For those of us who are caregivers, or interacting with seniors in any capacity, we should also take extra care with our own personal hygiene. 5. If you are unwell, do avoid interacting with seniors, and only do so when you are better. 6. From 11 March 2020, the government suspended all senior-centric activities organised by government agencies for two weeks, until 24 March 2020; it was extended for another two weeks, until 7 April 2020.	If seniors feel unwell or have respiratory illnesses (*e.g.*, common cold), they can visit any of the Public Health Preparedness Clinics (PHPC). Patient low risk (self isolated at home for 14 days): (a) Age < 30; (b) No chronic comorbidities; (c) Reassuring clinical features (no dyspnoea, respiratory rate ≤ 20 breaths/min, normal SpO2%, not requiring oxygen therapy); (d) Normal chest X-ray; (e) Reassuring laboratory result (CRP ≤ 60 mg/L, LDH ≤ 330 U/L, Lymphocytes ≥ 1×10^9/L, Neutrophils ≤ 3×10^9/L).	The treatment is similar to other patients, there is no special treatment procedure for senior patients. Patient high risk (treatment in hospital): (a) Age > 30, particularly > 50; (b) Chronic comorbidities (chronic lung, heart, or kidney disease, A1c > 7.2%, immunosuppression); (c) Concerning clinical features (dyspnoea, respiratory rate > 20 breaths/min, abnormal SpO2% (< 95%), requiring oxygen therapy), (d) Chest X-ray with pneumonia; (e) Concerning laboratory result (CRP ≥ 60 mg/L, LDH > 330 U/L, Lymphocytes < 1×10^9/L, Neutrophils > 3×10^9/L. Others: rising ferritin level, D-dimer > 1 ug/ml, elevated troponin). Patient severe (treatment in ICU): (a) Dyspnoea; (b) RR > 30 breaths/min; (c) P/F ratio < 300; (d) 50% of lung fields within 24-48 hours; (e) Currently receiving of mechanical, invasive, or non-invasive ventilation; (f) Receiving intravenous vasoactive medications to maintain mean arterial pressure > 65 mmHg and myocarditis/myocardial dysfunction secondary to SARS-CoV-2.	1. The bodies of those infected with COVID-19 will be prepared for cremation or burial by healthcare workers in hospitals as part of a set guidelines issued by the National Environment Agency (NEA). 2. The protocols include double-bagging the bodies before they are placed in airtight coffins. 3. The collecting, casketing, and transporting bodies for cremation or burial will be restricted to companies whose employees have undergone the basic infection control course by the National Centre for Infectious Diseases.

[#]Azithromycin is an antibiotic that fights bacteria. AIIR, Airborne Infection Isolation Rooms; IPD, In Patient Department (Hospital Inpatient Care); PKD, Pejabat Kesihatan Daerah (Regional Health Officer in Malay Language).

special handling of the elderly after being declared cured, to prevent recurring infection. Elderly who have experienced a decrease in the immune system, even though they have recovered from COVID-19, have insufficient immunity and could be infected again.

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