

Guidelines for Surveillance and Investigation of
Coronavirus Disease 2019 (COVID-19)
(Version Date: May 15, 2020)

Surveillance of Coronavirus Disease 2019 (COVID-19)

The objectives of this surveillance are to:

1. Detect, investigate, and contain the outbreaks of Coronavirus Disease 2019 (COVID-19)
2. Monitor the outbreak situations and epidemiology of COVID-19

Case Definitions (as of May 1, 2020)

1. **Patients under investigation (PUIs)** are determined based on **signs/symptoms**, along with **risk factors** as follows:

Scenario 1: Surveillance at Points of Entry (POE) Quarantine Stations

*Person with body temperature ≥ 37.3 °C, or at least one of the following respiratory symptoms, i.e. cough, runny nose, sore throat, loss of smell, tachypnea or dyspnea, **plus** history of travel to or from foreign countries via any ports of entry*

Scenario 2: Surveillance among suspected/confirmed case of COVID-19 infection

2.1 *Symptomatic suspected case is defined as an individual with subjective fever or body temperature ≥ 37.5 °C, and/or at least one of the following respiratory symptoms, i.e. cough, runny nose, sore throat, loss of smell, tachypnea or dyspnea, **accompanied by** one of the following exposure risks within 14 days prior to illness onset:*

- 1) *History of travel to or from, or lived in the areas affected by the outbreaks of COVID-19;*
- 2) *Individuals whose occupation involves interactions with tourists, visiting crowded places, or having contacts with people;*
- 3) *Visited public places where there are large gatherings of people, markets, shopping malls, health facilities, or public transport system;*
- 4) *Having been in close contact with a confirmed case of COVID-19 infection.*

2.2 ***Pneumonia case** who is suspected by treating physician of having contracted COVID-19*

Scenario 3: Surveillance among healthcare workers (HCWs): *HCW who reported subjective fever or documented body temperature ≥ 37.5 °C, **OR** at least one of the following respiratory symptoms, i.e. cough, runny nose, sore throat, loss of smell, tachypnea or dyspnea, or difficulty breathing, or pneumonia, who is suspected by treating physician of having COVID-19 infection, or who has the history of exposure to suspected/confirmed case of COVID-19.*

Scenario 4: Cluster of patients: *Surveillance among **a cluster** of ≥ 5 epidemiologically linked patients with acute respiratory tract infection (ARI), detected in the same place and during the same week, whose rapid test or PCR results all came back negative for influenza viruses.*

2. **Confirmed case** *is defined as a PUI who has tested positive for genetic materials of SARS-CoV-2 by PCR from one (1) reference laboratory designated by the Department of Medical Sciences (DMSc), or by genetic sequencing, or by culture.*
3. **Asymptomatic infection** *is defined as a person who has tested positive for genetic materials of SARS-CoV-2 by PCR from one (1) reference laboratory designated by the Department of Medical Sciences (DMSc), or by genetic sequencing, or by culture, but has shown no signs and symptoms.*

Outbreak reporting system

Operational procedures

1. When a PUI is identified, consider placing the patient in isolation* based on the guidelines implemented by the Department of Medical Services (DMS).
2. All service units/health facilities should enter all PUI data and information into the COVID-19 reporting system and issue a SAT Code to each PUI in order to comply with the requirements by the Communicable Diseases Act B.E. 2558 (2015). Specimens will be collected from each PUI and submitted for laboratory testing at lab facility certified by the Department of Medical Sciences (DMSc) and registered with the National Health Security Office (NHSO).
3. Laboratory performing the test enter laboratory findings for all PUIs into the COVID-19 reporting system to ensure compliance with the Communicable Diseases Act B.E. 2558 (2015).
 - 3.1 In case where SARS-CoV-2 is detected, positive results must be immediately entered into the COVID-19 reporting system (within three hours of detection) and laboratory report must also be attached.
 - 3.2 In case where no SARS-CoV-2 is detected, negative results should also be entered into the reporting system.
4. Provincial Health Offices (PHOs)/BMA Health Department should actively follow up laboratory results, initiate outbreak investigation if a confirmed case(s) of COVID-19 is/are detected, document outbreak investigation report into the COVID-19 reporting system according to the case investigation form for patient with COVID-19 (Form Novelcorona 2; Appendix A) within 12 hours, and coordinate with their respective regional Office of Disease Prevention and Control (ODPC) and Institute for Urban Disease Control (IUDC), respectively.

Note: * Case isolation means **an isolation of the patient in a designated area** to prevent further spread of the disease.

Investigation of Coronavirus Disease 2019 (COVID-19)

Outbreak investigation team should conduct disease investigation using Form Novelcorona 2 (Appendix A).

Criteria for initiation of disease investigation and contact tracing

These criteria, which initially provide guidance for outbreak investigation, may be adjusted to accommodate rapidly evolving situations. For instance, in the local area where a large number of infections are reported or there has been widespread transmission, an outbreak investigation may be conducted via telephone, delegating local health authorities to conduct the investigation, or obtaining and compiling relevant documents from service units via electronic mail (e-mail).

District	Province	ODPC	National Level
Criteria for initiation of disease investigation in the event of detection of confirmed cases			
All cases	All cases	- Index case of the province - Cluster of 2-4 confirmed cases	- Cluster of ≥ 5 confirmed cases

District	Province	ODPC	National Level
Criteria for initiation of contact tracing			
All cases	Close contacts of the first confirmed case of the district	- Close contacts of the first confirmed case of the province - When requested by the province	- Close contacts of a confirmed case(s) in a cluster of ≥ 5 confirmed cases

As for **Bangkok areas**, the decision to initiate disease investigation and contact tracing efforts should be subject to mutual agreement between Emergency Operations Center (EOC), Institute for Urban Disease Control (IUDC), Department of Disease Control (DDC) under Ministry of Public Health (MOPH), and Disease Control Division under BMA Health Department.

Note: In the event of the index case of the local area and, following assessment of preparedness of the local disease investigation team, it is determined that support from a higher level of disease investigation team is needed, request may be made to have them join the local disease investigation team in the disease investigation efforts.

Criteria for discontinuation of case investigation

Once the patient is definitely diagnosed as not being infected by SARS-CoV-2 and discharged from hospital, or in the event that the patient has not been hospitalized and has completely recovered.

Criteria for outbreak investigation in the event of a cluster of patients with acute respiratory tract infections (ARI)

To enhance sensitivity of the surveillance system so that any COVID-19 cases can be rapidly detected in the local area, the investigation of a cluster of patients with acute respiratory tract infection (ARI), whose rapid test or PCR results all came back negative for influenza viruses, should also be conducted.

District/Health Center	Province/BMA	ODPC/IUDC	National Level
- Cluster of ≥ 5 ARI cases whose rapid test results for flu A & B came back negative. - Cluster of ≥ 3 ARI cases among	- Cluster of ARI cases in which a confirmed case(s) of COVID-19 is/are detected.	Cluster of ARI cases in which a first confirmed case of COVID-19 is detected in the province.	Cluster of ARI cases in which a first confirmed case of COVID-19 is detected in the region/health zone.

Disease investigation for Patients under Investigation (PUIs)

- Interview the patient, his/her relative and perform chart review, as well as taking photo of chest radiographs, if available. Precautions should be taken by members of disease investigation team according to Appendix B. In addition, it is also important to focus on the following issues:
 - As for information on exposure risks of those who have returned from the areas affected by the outbreaks, history of contact with COVID-19 case, and hospital visit or hospitalization while in the affected area should also be collected.
 - For those who have had no travel history to the areas affected by the outbreaks of COVID-19, the information on history of hospital visit (or working in health facilities providing care for patients with respiratory disease) within 14 days prior to illness onset should also be obtained.
 - Other exposure risks, e.g. close contact/ mingling with other patients, should be described in more details according to standard disease investigation practices (i.e. the

nature of activities you attended along with patients, duration of activities, and frequency of the meeting/activities within 14 days prior to illness onset).

2. Specimen collection for laboratory testing (refer to Appendix C)

2.1. Patients with upper respiratory tract infection (URI):

Collect nasopharyngeal swab in 3 ml VTM/UTM, or nasopharyngeal aspirate, nasopharyngeal wash in sterile container (no need to be placed in VTM/UTM) for SARS-CoV-2 PCR.

2.2. Patients with lower respiratory tract infection (LRI) (e.g. pneumonia, ARDS), specimens should be collected according to Item 2.1; AND

2.2.1. **Non-intubated patients:** *Collect sputum sample in sterile container⁽¹⁾ or VTM/UTM for SARS-CoV-2 PCR.*

2.2.2. **Intubated patients:** *Collect tracheal suction secretion and place it in 2-3 ml sterile container. If no secretion is obtained, cut a portion of suction line and place it in VTM/UTM for SARS-CoV-2 PCR.*

2.2.3. **Fatal cases:** *Specimen collection for laboratory analysis should be performed according to Item 2.2.2. In case of non-intubated patient, collect lung biopsy in sterile container containing saline solution⁽²⁾ according to the guidelines for management of fatal cases due to suspected or confirmed COVID-19 infection.*

Notes: In the event laboratory results come back negative for COVID-19 and the patient's condition has not improved, this may be attributable to the specimen not being properly collected and processed or poor quality specimen. Procedures for specimen collection and transportation should be reviewed and specimen will have to be collected for repeat test 24 hours after the first collection.

References:

- (1) CDC. Interim Guidelines for Collecting, Handling, and Testing Clinical Samples from Persons under Investigation (PUIs) for 2019 Novel Coronavirus (2019-nCoV) Published on February 2, 2020. Available at <https://www.cdc.gov/coronavirus/2019-nCoV/lab/guidelines-clinical-specimens.html>
- (2) WHO. Interim guidance on laboratory testing of human suspected cases of novel coronavirus (nCoV) infection 10 January 2020. Available at <https://apps.who.int/iris/bitstream/handle/10665/330374/WHO-2019-nCoV-laboratory-2020.1-eng.pdf>

Designated laboratory facilities for confirmatory testing of SARS-CoV-2

- National Institute of Health (Thai NIH) Laboratory, Department of Medical Sciences (DMSc)
- Certain regional Medical Sciences Centers with capacity to perform SARS-CoV-2 PCR
- Thai Red Cross Emerging Infectious Disease Health Science Center (TRC-EID) Laboratory
- Other laboratories designated by Department of Medical Sciences (DMSc)

(Refer to the current Notification by National Institute of Health (Thai NIH), Department of Medical Sciences (DMSc)

In the event that initial laboratory testing is performed by a laboratory not included in the DMSc notification, a repeat test must be subsequently done at one of the DMSc-designated laboratories.

Isolation of Patients under Investigation (PUIs)

1. If PUI is detected:

1.1 *If hospitalization is required (i.e. pneumonia, difficulty breathing), place the patient in isolation for hospitalization according to the guidelines for clinical practices, diagnosis, and treatment provided by Department of Medical Services (DMS).*

1.2 *In case where the PUI is asymptomatic or experiences mild symptoms, consider whether the patient can undergo home isolation while laboratory results are pending.*

1.2.1 *If home isolation is not possible, place the patient in isolation room at hospital.*

1.2.2 *If home isolation is possible, the patient will be asked to sign to acknowledge home isolation order and provided with necessary information related to the disease information, recommended practices during home isolation and symptom monitoring.*

2. Responsible staff are deployed to conduct outbreak investigation and initially contain the outbreak.

2.1 *In the event that initial laboratory results came back negative:*

2.1.1 *Assess the patient's condition. If not recovered, attending physician may consider collecting specimen for a repeat test.*

2.1.2 At discharge, patient will be asked to further maintain home isolation until 14-day isolation period is complete following the date of his/her departure from the high-risk areas or last contact with a confirmed case of COVID-19 infection. He/she will also be asked to wear face mask at all times during this home isolation period. After this home isolation period, if the patient has recovered, he/she may continue with his/her daily activities. If the symptoms have not improved or have deteriorated during this time, he/she should inform health authorities immediately.

2.2 If the patient has tested positive for COVID-19 infection, hospital isolation is always mandatory.

3. End of case isolation

3.1 In case the patient has met the PUI criteria and initial test results came back negative, the patient should be placed under isolation for at least 14 days following the date of his/her departure from the high-risk areas or last contact with a confirmed case of COVID-19 infection, or until full recovery.

3.2 In case of a confirmed case, strict adherence to the guidelines for clinical practices, diagnosis, and treatment provided by Department of Medical Services (DMS) is needed.

Active case finding

Activities related to active case finding include:

1. Close contact tracing
2. Active case finding
3. Asymptomatic infection finding

Close contact tracing

Principal Concepts:

Close contact is defined as a person who has had interactions with a confirmed or probable case of COVID-19 infection. This can be divided into two groups.

1. Close contact who may be a reservoir, e.g. close contact of COVID-19 case within 14 days prior to illness onset of the case.
2. Close contact who may have contracted the virus from COVID-19 case, e.g. close contact of COVID-19 case from the date of illness onset.

Close contacts include:

- A person who has come into close contact or had conversation with the patient within one-meter distance for >5 minutes; or being coughed or sneezed on by a patient when he/she did not wear appropriate personal protective equipment (PPE), e.g. face mask.
- Those who are in an enclosed space without proper ventilation, e.g. in the same air-conditioned bus/air-conditioned room as the patient, and are within one meter of the patient for >15 minutes without wearing appropriate PPE.

Close contacts can be divided into:

High-risk close contact, defined as close contact who is more likely to contract or spread the virus with the patient through exposure to respiratory secretions of the patient while not wearing PPE according to standard precautions.

Low-risk close contact, defined as a close contact who is less likely to contract or transmit the virus with the patient. This includes close contacts who have not met the definition for high-risk close contact.

Contact tracing – once a confirmed case of COVID-19 is detected, contact tracing will be initiated to locate those who have been exposed to the patient and follow up on their health condition. Contact tracing will include the following key activities.

1. Obtaining information from the patient, individuals (e.g. patient's relatives) and other related information, e.g. travel information
2. Locating close contacts – to inform them that they may have been exposed to the viruses, facilitate their access to diagnosis and treatment services, and provide recommendations on quarantine. It is important for health authorities to ensure that those close contacts will not be subjected to stigmatization. In some cases, an identity of the patient should also be withheld.

Contact tracing is mandatory as part of disease control and in certain countries is

mandated by the law. This must be carried out in compliance with ethical principles laid out in the Communicable Diseases Act B.E. 2558 (2015), which also calls for the quarantine of close contacts.

Reverse contact tracing or source case investigation – Upon detection of a confirmed case of COVID-19, the patient will be asked whether he/she, during one possible longest incubation period prior to illness onset, had come into close contact with anyone who might be a patient, who may be a previously diagnosed patient, or who has never been diagnosed for COVID-19 infection and may warrant specimen collection for laboratory analysis.

** In case of asymptomatic infection, the specimen collection date should be considered the date of illness onset.*

Classification of close contacts based on different levels of exposure risks

High-risk close contact	Low-risk close contact
Household contact	
1) Family members, relatives, caregiver of symptomatic COVID-19 case 2) Individuals who live in the same household as a confirmed symptomatic case of COVID-19	
Healthcare-associated contacts	
1) Medical and clinical staff, other hospital staff, and those visiting hospitalized COVID-19 case without wearing personal protective equipment (PPE) according to standard precautions. 2) Other patients (with other medical conditions) who are/were hospitalized during the same period as, in the same room as, in the same row as the COVID-19 case, and visitors of those patients who visited the patients when the COVID-19 case had yet to be moved to an isolation room. 3) Laboratory staff who did not wear PPE according to standard precautions while handling and processing clinical specimens collected from COVID-19 case.	Hospital staff, laboratory staff, whose job is related to COVID-19 case, or visitors of hospitalized patient, who were wearing PPE according to standard precautions.
Close contact at school, workplace, and community	
1) Students or co-workers include close friends who were interacting or mingling with symptomatic COVID-19 case; AND who may have been exposed to respiratory secretions , cough, sneeze from COVID-19 case 2) Individuals who live in the same community as COVID-19 case or in another community, AND who have been exposed to respiratory secretions, cough, sneeze of the case	1) Students or co-workers who are in the same class/room/department as symptomatic COVID-19 case who do not meet the definition of high-risk close contact. 2) Individuals who live in the same community as COVID-19 case and were found to be interacting with symptomatic case of COVID-19 within one-meter distance.

High-risk close contact	Low-risk close contact
Travel-related close contacts	
1) In case of symptomatic COVID-19 case traveling on board a commercial flight: <ul style="list-style-type: none"> - Passengers on board the same flight as the case; passengers in close proximity to and in the same row as the case, and in the immediate two front and back rows - All flight attendants in the same section of the plane where the case was seated. - Co-travelers in the same group as the case, passengers in the same tour group 2) In case of symptomatic COVID-19 case traveling on other types of public transportation: <ul style="list-style-type: none"> - Individuals traveling with the case - Passengers or crew members who were exposed 	1) In case of symptomatic COVID-19 case traveling on board a commercial flight: <ul style="list-style-type: none"> - Passengers on board the same flight as the case; passengers in close proximity to and in the same row as the case, and in the immediate two front and back rows - All flight attendants in the same section of the plane where the case was seated. - Co-travelers in the same group as the case, passengers in the same tour group 2) In case of symptomatic COVID-19 case traveling on other types of public transportation: <ul style="list-style-type: none"> - Individuals traveling with the case - Passengers or crew members who were

<p>to respiratory secretions, cough, or sneeze from the case.</p> <p>- Passengers who were within 1 meter of the case.</p>	<p>exposed to respiratory secretions, cough, or sneeze from the case.</p> <p>- Passengers who were within 1 meter of the case.</p>
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Tracing of Close Contacts Based on Level of Exposure Risks

Upon detection of a confirmed case of COVID-19 infection, close contacts of the case should be followed immediately in order to assess their symptoms and rapidly detect potential new cases. Tracing of close contacts may be carried out by local health authorities.

Guidelines for isolation of close contacts of confirmed cases of COVID-19 and related activities

High-risk close contacts (follow the Guidelines in Appendix D and use Forms provided in Appendix E)

Activities	Minimum PPE requirements
<p>High-risk close contacts are screened for fever (using hand-held thermometer) and respiratory symptoms, and staff should proceed as follows:</p>	<ul style="list-style-type: none"> - N95 - Goggle
<p>1. If the PUI criteria is met, proceed with PUI* investigation procedure as follows:</p> <p>1.1 PUI is admitted to negative-pressure isolation room or kept in a designated temporary isolation area.</p> <p>1.2 Specimens are collected according to Department of Medical Services (DMS) Guidelines for Management of COVID-19 Cases.</p> <p>*Note: Clinical staff should follow the Guidelines for Management of PUI for COVID-19.</p>	<p>Cover all (jumpsuit)</p>
<p>2. If the PUI criteria is not met:</p> <p>2.1 High-risk close contacts will be asked to:</p> <ul style="list-style-type: none"> - Take temperature by themselves for 14 days after the day of last contact with the confirmed case. Inform health officials immediately if they have fever. - Strictly follow home quarantine guidance. Avoid non-essential travel. <p style="padding-left: 40px;">Avoid going to crowded public places/communities</p> <ul style="list-style-type: none"> - Protect themselves and people around them by frequently washing their hands and wearing face mask at all times. - Receive a daily follow-up phone call from member of disease investigation team or they may be followed via application <p>2.2 One nasopharyngeal swab is collected in VTM starting from Day 5 onward from the date of last exposure to confirmed case of COVID-19. The specimen will then be submitted for SARS-CoV-2 PCR at reference laboratory or any laboratory facility certified by Department of Medical Sciences (DMSc).</p>	<ul style="list-style-type: none"> - N95 - Goggle - Water-proof, disposable gown - Gloves

Low-risk close contacts:

1. They will be allowed to go about their business as usual but should be advised to avoid crowded places. They will be asked to self-monitor symptoms for 14 days following the last exposure to a confirmed case.
2. They will be asked to inform health authorities immediately if they develop fever or respiratory symptoms so that their specimens can be collected, symptoms monitored, and temperature taken according to the guidelines for monitoring of high-risk close contacts.

Active case finding

When a confirmed case whose source of infection in the area affected by ongoing outbreak cannot be definitely established, it is more likely that the patient may have contracted the virus from the community he/she is residing or living. It is also possible that there may be some other cases in the community or ongoing outbreak locally. Therefore, there is a need for active case finding in the community to detect potentially ongoing transmission of the viruses and rapidly isolate the patients. Typically, active case finding will further include the entire community where the confirmed case of COVID-19 infection is residing, not restricted only to his/her close contacts.

How large the extent of active case finding would be will depend largely on the principle of finding other patients who were likely to have common exposure as the confirmed case. For example, if a sixth grader is a confirmed case of COVID-19 infection, contact tracing will be restricted only to his/her close friends or classmates. However, active case finding will further expand its scope to also include the entire school as the confirmed case may have used the elevator, cafeteria, gym, library, computer room, etc. If the patient had contracted the virus from these places, it is also likely that other students or school staff members might have been infected as well.

Active case finding is to be conducted among the following two populations:

1. **Suspected case**, defined as a patient with documented temperature ≥ 37.5 °C or history of subjective fever accompanied by one of the following symptoms: cough, runny nose, sore throat, shortness of breath, loss of smell within 14 days prior to illness onset of an index case until 28 days following the detection of the last confirmed case of COVID-19 infection.
2. **Individuals at risk for infection** including:
 - 2.1 Low-risk close contacts of a confirmed case of COVID-19
 - 2.2 All those who live, work, study, or go about their daily life in the same community, the same place as the patient, e.g. the same department/floor, school, living quarters (military barrack, prison), residential condominium, etc.

Operational procedures for active case finding:

- 1) All suspected cases who remain symptomatic on the date of disease investigation should have specimen collected to test for SARS-CoV-2 (guidelines for specimen collection for PUIs should be followed). As for suspected cases who have shown no signs and symptoms, no specimen collection is needed.
- 2) All suspected cases, whether symptomatic or not, should be quarantined (stay home from work/school) for at least 14 days starting from the date of onset of symptoms, despite full recovery or negative test results. In the event that a large number of suspected cases are identified, a cohort ward may be set up in a hospital, or special facilities designated to accommodate a large number of patients, e.g. field hospital (cohort ward), by reporting to provincial governor and working closely with related supporting agencies such as military barracks, local administration organizations, etc.
- 3) Public events involving large gathering or movement of people should be called off for 28 days after detection of the last confirmed case of COVID-19 infection.
- 4) Disinfect the area where the outbreak has occurred or related to the outbreak following the guidelines provide by the Ministry of Public Health (MOPH).
- 5) Consider closing the places/venues as appropriate if there is a sustained outbreak for >14 days following the detection of index case.
- 6) Prospective surveillance will be carried out for the next 28 days following the detection of the last confirmed case of COVID-19 infection. During this period, any individuals who meet the PUI criteria will have specimen collected to test for SARS-CoV-2.
- 7) In the event that outbreak of COVID-19 is detected among a cluster of patients with acute respiratory tract infection (ARI), please refer to the guidelines for detection and investigation of cluster outbreaks of COVID-19 (Appendix G).

Asymptomatic infection finding

In the event that a sustained transmission of COVID-19 are reported for at least 28 days, the outbreak investigation team will be required to initiate asymptomatic infection finding among those living in the area (places, communities, villages). The extent of asymptomatic infection finding depends on frequency of case detection, density of the populations, and evolving local situation, while taking into account the efficiency and effectiveness of the effort in parallel with the implementation of social distancing measure.

Order to carry out active case finding in the event of detection of confirmed case of COVID-19

Events (by order of active case finding)	Methods	Disease Control Measures
1. Detection of index case in the local area; causes or risk factors are definitely determined; epidemiological linkage to other patients is established	Conduct disease investigation: - Identify all high-risk close contacts and tests are performed for all - Identify all low-risk close contacts and tests are performed when symptomatic	- All high-risk close contacts must be quarantined for at least 14 days. - All low-risk close contacts must be placed under observation for at least 14 days.
2. Detection of patient whose causes or risk factors cannot be determined; or no epidemiological linkage to other patients is established	Initiate active case finding to identify additional cases as follows: - PUI definition is applicable; active case finding is conducted among suspected case of COVID-19 prior to the date of illness onset of confirmed case; followed by tests for SARS-CoV-2 - Tests performed on specimens collected from low-risk close contacts or those who were in the same place as confirmed case of COVID-19	- Suspected cases must be quarantined/isolated for at least 14 days. - All low-risk close contacts must be placed under observation for at least 14 days. - Disease control measures are introduced among populations at risk for infection
3. Sustained transmission of COVID-19 is reported in the same area for ≥ 28 days (depending on frequency of case detection, density of populations, and evolving situation in the local area)	- If the outbreak continues to spread despite identification of all close contacts, completion of active case finding, and implementation of all disease control measures, asymptomatic infection finding will need to be carried out by specifically targeting particular areas, e.g. villages, places where sustained transmission is reported, taking into account the efficiency and effectiveness of the efforts.	- Should ensure that suspected cases be kept under observation for at least 14 days - Strict social distancing measures should be introduced, including closure of high-risk places

Note: These measures do not apply to active case finding among populations to accommodate the upcoming relaxation of restrictions currently in place.

COVID-19 testing for surveillance among high-risk populations or high-risk places

This applies to infections among high-risk populations as determined by Provincial Communicable Disease Committee (PCDC), based on the Guidelines approved by National Communicable Disease Committee (NCDC).

Definitions:

1. **High-risk population** is defined as a large number of people staying together in one place or those whose occupation involves frequent interaction with other people. High-risk population includes:

- Migrant workers at construction sites
- Migrant workers staying in crowded living quarters
- New inmates
- Detainees at immigration detention facilities
- High-risk occupations, e.g. Healthcare workers, public transport drivers and staff, officers at immigration checkpoints, market and street vendors, postmen, courier and delivery staff

2. **High-risk place** is defined as any places where large crowds gather, e.g. slims, markets, places of worship, bus terminals.

Guidelines for selection of high-risk populations or places for surveillance purposes

1. The selection is based primarily on the local circumstances with the following priorities:
 - 1.1 COVID-19 cases were previously reported in the same population group or place.
 - 1.2 If no COVID-19 cases were reported in the group but there is a population group that meets the definition, consider designated high-risk population and place, based on risk factors and the actual circumstances in the locality.

The following high-risk populations and places will be prioritized for targeted surveillance:

- 1) Healthcare workers at an increased risk for infection
 - 2) New inmates
 - 3) Individuals whose occupation involves frequent interaction with a lot of people, e.g. public bus drivers/conductors, mailmen, and delivery/courier staff
 - 4) Other population groups may be considered as high-risk based on the local circumstances, e.g. staff at immigration checkpoints, market vendors, corrections facility staff, worker supervisors. Migrant workers in crowded living quarters, crowded communities such as those under National Housing Authority (NHA)
2. Provincial Health Office, as secretary of Provincial Communicable Disease Committee (PCDC) develops a proposal for surveillance among high-risk populations and places and submit the proposal for consideration by PCDC for planning and budget request.
 3. Develop implementation and monitoring and evaluation (M&E) plan, as well as strategy for disease prevention and control for the population group.
 4. Minutes of the meeting and progress report will be submitted to Secretary of National Communicable Disease Committee (NCDC) and MOPH Inspector-General on a weekly basis.

For consultation please contact:

- PUI report and PUI specimen testing request: Tel: 061-663-9101 (SAT DDC)
- Outbreak investigation, contact tracing, and submission of specimens collected from close contacts: Tel 061-663-9232 (OPS DDC)

Appendix A:
Case Investigation Form for Patient with COVID-19

Code _____ **Case Investigation Form for Patient with COVID-19**

1. Demographic information

Personal ID No/Passport No.....

Full name:..... Sex Male Female Age...Years.....months Nationality.....

Occupation (indicate nature of work performed, e.g. healthcare worker, official with frequent exposure to foreign tourists).....

Workplace/school/university..... Contact No.....

Phone number registered with “Mor Chana (Doctor’s Victory)” Application.....

Current address in Thailand: House Other (specify).....

No..... Village Group#..... Village/community..... Alley..... Road..... Sub-

district..... District..... Province.....

Underlying medical condition..... History of smoking NO Current smoker Quit smoking

2. Clinical data

Date of illness onset (dd/mm/yyyy)..... Date of first hospitalization (dd/mm/yyyy)

Health facility of first hospitalization..... Province.....

Health facility of current hospitalization Province

Signs & symptoms on the date of case detection: Fever Temperature on admission..... °C O₂Sat..... Mechanical ventilation

Cough Sore throat Muscle pain Runny nose Sputum production Dyspnea

Headache Watery stool Loss of smell Loss of taste Other (specify).....

(First) Chest X-ray: Not Done Done, Date..... Results

(First) CBC: Date..... Results: Hb..... g/dL Hct.....% Platelet count..... x10³

WBC(N.....% L % Mono % Other

Results of influenza test: Method..... Negative Positive Flu A Flu B

Results of SARS-CoV-2 Test:

Date of specimen collection	Specimen Type	Laboratory performing the test	Results
			<input type="checkbox"/> Detected <input type="checkbox"/> Not detected

Note: Diagnosis is based on results from one (1) laboratory.

Patient classification: OPD IPD, Date of admission..... Admission diagnosis.....

Drug administration for treatment of COVID-19 infection: NO YES, Date of first dose of anti-viral drug.....

Darunavir/Ritonavir (DRV/r) Lopinavir/Ritonavir (LPV/r) Favipiravir

Chloroquine Hydroxychloroquine Other medication (specify).....

Patient status: Recovery Ongoing hospitalization Dead Referred to (specify health facility).....

Other (specify)

3. History of exposure risks

- Resided in or returned from the area affected by the outbreaks within 14 days prior to illness onset; if “YES” specify city Country NO YES Entered Thailand on (date)..... on (Airlines)..... Flight#..... Seat#.....

- Hospitalization or patient visit in hospital in the area affected by the outbreaks within 14 days prior to illness onset NO YES

- Cared for or was in close contact with patient with influenza-like illness (ILI) or pneumonia within 14 days prior to illness onset

- | | |
|---|--|
| ● History of exposure to a confirmed case of COVID-19 infection within 14 days prior to illness onset | <input type="checkbox"/> NO <input type="checkbox"/> YES |
| ● Occupation with frequent exposure to foreign tourists within 14 days prior to illness onset | <input type="checkbox"/> NO <input type="checkbox"/> YES |
| ● History of visit to crowded places, e.g. pub, boxing stadium, etc. | <input type="checkbox"/> NO <input type="checkbox"/> YES |
| ● Patient among a cluster of respiratory tract infection or pneumonia cases | <input type="checkbox"/> NO <input type="checkbox"/> YES |
| ● Severe or fatal pneumonia case of unknown etiology | <input type="checkbox"/> NO <input type="checkbox"/> YES |
| ● Healthcare worker or laboratory staff | <input type="checkbox"/> NO <input type="checkbox"/> YES |
| ● Other (specify) | |

4. Details of events, history of exposure risks before infection

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Activities and travel records following date of illness onset:

Day	Date	Activity/Place	Number of participants (identify individual person, is possible)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

5. Contact tracing (*list of close contacts of symptomatic case of COVID-19; please provide description of exposure; if sick also indicate symptoms*)

No	Full Name	Sex	Age	Address/Contact No.	Date of Exposure	Description of Exposure	Sick/Not Sick (if sick, indicate date of onset and symptoms)	PPE Worn

Reported by..... Agency..... Phone No.....
 Date of Investigation.....

Appendix B:
Precautions Taken by Members of Disease Investigation
Team

Precautions Taken by Members of Disease Investigation Team

Patient will be asked to wear face mask. Interviewer is required to don the following personal protective equipment (PPE) as minimum requirement and strictly follow respiratory and contact precautions and practices, i.e. proper hand washing after completing investigation of each case. It should be noted that PPE types required will depend on patient's symptoms and related activities as mentioned below.

PPE	Patient interview without specimen collection		Collection of respiratory tract specimens
	Patient has no cough or slight cough	Patient has severe cough	
Head cap	-	+/-	+
Goggles or face shield	-	+	+
Surgical mask	+	-	-
N95 respirator or higher	-	+	+
Disposable gloves	+/-	+	+
Full-length gown or water-proof jumpsuit with head cap	+	+	+

Appendix C:
Specimen Collection and Coordination Procedure

Procedure for specimen collection and necessary supplies and equipment

1. Label preparation

Two labels will be prepared per one specimen. The first label is attached to Viral Transport Media (VTM)/ Universal Transport Media (UTM), or sterile container. The second label is attached to outer (second-layer) zip lock bag. Mark the label using only water-proof indelible marker pen. The label should include the following details.

1. ID Code of the patient/individual from whom specimen is collected. This ID Code is provided by DDC.
2. Date of specimen collection
3. Types of specimen collected, e.g. nasopharyngeal swab

Sample label

ID Code _____ Date _____
of specimen collection 30 Oct 2015
Specimen type: Nasopharyngeal swab

Viral Transport Media (VTM)/Universal Transport Media (UTM)

Label is attached on Viral Transport Media (VTM)/ Universal Transport Media (UTM). This VTM/UTM is used to contain both nasopharyngeal swab.



Universal Transport Media (UTM)



Viral Transport Media (VTM)

2. Nasopharyngeal Swab

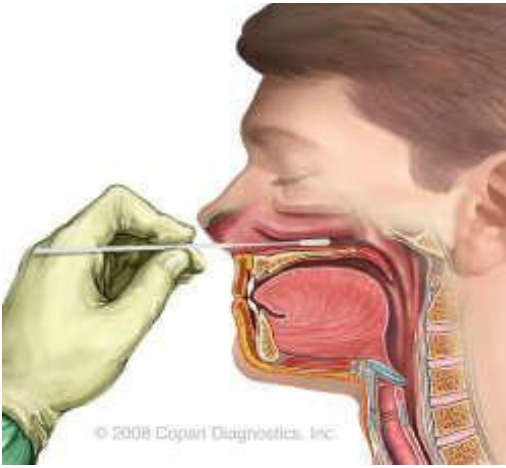
Equipment and supplies

1. Viral Transport Media (VTM) or Universal Transport Media (UTM)
2. Dacron or Rayon swabs made from straight wire or flexible plastic not coated with calcium alginate as it may interfere with PCR reading

Picture below shows swabs made from straight wire shaft (top) and plastic shaft (bottom).



Collection method



www.rapidmicrobiology.com

3. Sputum collection

Equipment: Sterilized container



Collection method:

Patient will be asked to expectorate or cough deeply. Sputum sample must be free of saliva and contained in sterilized container.

Specimen storage

Equipment: Parafilm



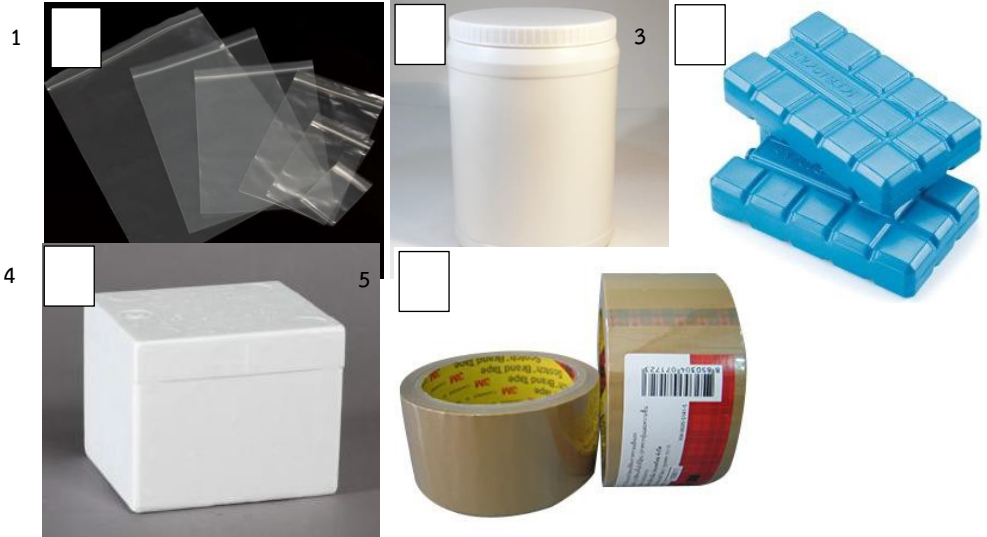
Storage procedure

1. Wrap VTM/UTM or sterile container containing specimens with parafilm around the seal of the container cap to prevent leakage.
2. Specimens will then be kept in a refrigerator at 2-8 °C and transported for laboratory testing within 72 hours. If this is not possible, store specimens in a freezer at -70 °C.

Specimen transportation

Equipment

1. Zip lock bag
2. Plastic container
3. Ice packs
4. Styrofoam box
5. Brown adhesive tape



Procedure

1. Place VTM/UTM containing specimens into three-layer Zip lock bags with specimen label being attached to second-layer Zip lock bag. Then place Zip lock bags in a plastic container.

2

The image shows a white styrofoam box filled with blue and white ice packs. A white plastic container with a lid is placed on top of the ice packs. The lid has a label with Thai text: "กระป๋องพลาสติก" (Plastic container).

2. Ice Packs will then be placed in a Styrofoam box and arranged in such a way that leaves sufficient room for containing plastic container. Keep plastic container in an upright position (do not make it tilt). Firmly close Styrofoam box and properly wrap its cover with adhesive tape to prevent the box cover from falling off during transportation.

Procedures for coordinating laboratory testing services:

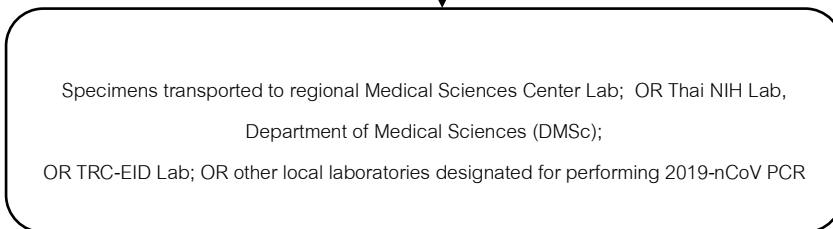
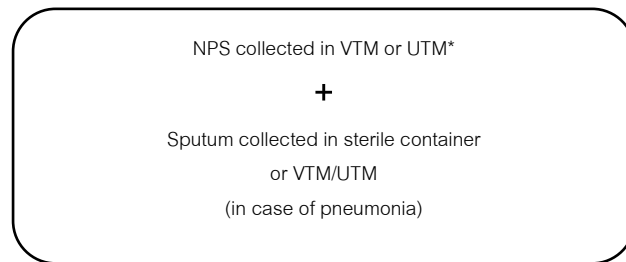
1. Once a PUI is detected, staff of health facility will log into the web-based electronic database, enter PUI data in order to have SAT Code issued and saved in the web-based electronic database. Data on lab testing request will be entered and laboratory testing request along with reference number will be issued.

Note: Laboratory testing request and specimen delivery forms are available for download at the Department of Disease Control's official website, via this link: <https://ddc.moph.go.th/viralpneumonia/guidelines.php>. Specimens should always be accompanied by specimen delivery form. In case of specimens obtained from multiple cases, a list of samples should also be attached to the shipment.

2. Once the SAT Code or contact code is confirmed, responsible staff should arrange for shipment of specimens following the local guidelines for transportation of specimens, e.g. via regional medical sciences center, public transport (interprovincial bus), or others.
 - In Bangkok: Health facilities should be responsible for shipment of specimens to laboratory.
 - Health Zone 1-12: Specimens should be sent to existing regional Medical Sciences Centers for laboratory diagnosis, or to other laboratories as appropriate. If the specimens are intended for laboratory testing at Thai NIH Lab, Department of Medical Sciences (DMSc), the shipment should be addressed directly to Thai NIH Lab.

Specimen Collection from PUI for COVID-19 Infection

Specimens collected on admission:



Specimens collected during hospitalization:

In the event of laboratory-confirmed case of COVID-19:

One 3.5ml clotted blood sample is collected;

Leftover clotted blood sample collected on admission from other laboratories is also acceptable.

Specimens collected on discharge:

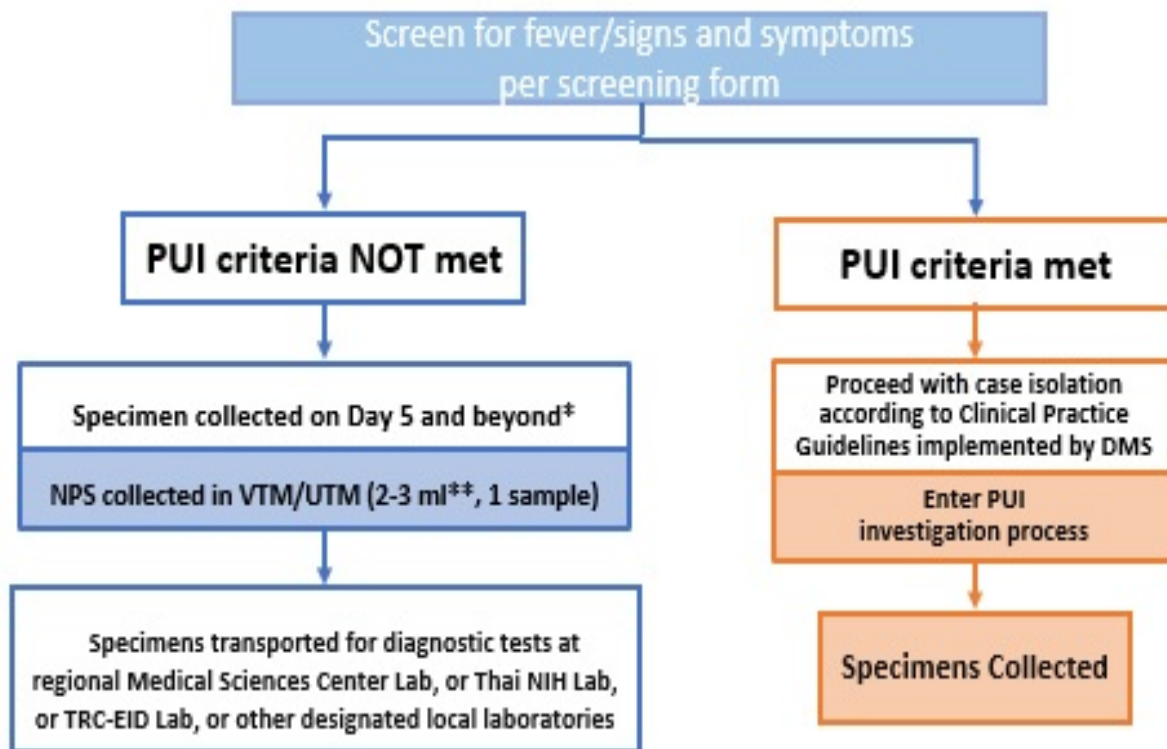
Only for laboratory-confirmed case of COVID-19, one 3.5ml clotted blood sample is collected.

Both clotted blood samples are submitted to BIDI Lab

Note: * If sample is to be tested by laboratory not approved by DMSc, one sample should be collected in 2-3ml VTM/UTM. If 1ml VTM/UTM is used, two samples will need to be collected.

Appendix D:
Guidelines for Management of High-Risk Close Contacts
of Confirmed Cases of COVID-19

Management of High-Risk Close Contacts of Confirmed Cases of COVID-19



High-risk close contacts should be managed as follows:

1. High-risk close contacts will be interviewed about travel plan or his/her whereabouts during 14 days following exposure.
2. High-risk close contacts will have temperature taken for 14 days after last exposure to confirmed case of COVID-19.
3. Asymptomatic close contacts undergo home quarantine.
4. Close contacts will be advised to protect themselves and people around them by frequently washing their hands and wearing face mask.

Note:

- * Specimen is to be collected from Day 5 onward following last exposure to a confirmed case of COVID-19.
- ** In case sample is to be tested by laboratory not approved by Department of Medical Sciences (DMSc), one sample is collected in 2-3 ml UTM/VTM. If 1ml VTM/UTM is used, two samples will need to be collected.

Appendix E

Screening Logbook for Close Contacts of Confirmed Case of COVID-19

Screening Logbook for Close Contacts of Confirmed Case of COVID-19

Full Name	Age (yr)	Sex	Nationality	Occupation	Signs & Symptoms										Relationship to the case (e.g. relative, lived in the same household with the case, traveled in the same tour group as the case)		
					Asymptomatic	Date of illness onset	Fever	Cough	Sore throat	Muscle pain	Runny nose	Sputum production	Difficulty breathing	Headache		Loss of smell	Other (specify)

Reported by Agency Telephone

Appendix F

Guidelines for Home Isolation
and Home Quarantine

Principal Concept

The terms “isolation” and “quarantine” are sometimes used interchangeably in a way that causes confusion. This is because they share a similarity in terms of keeping someone physically away from other people. However, the terms should be used with different purposes and timeframes and a summary is provided in the table below.

	To be used with	Objectives	Duration
Isolation	<ul style="list-style-type: none">● Symptomatic patient● PUI	To prevent further transmission	Until transmission period has lapsed
Quarantine	Asymptomatic close contact	To observe onset of illness or symptoms	Until incubation period has lapsed

Below is an example of how the terms are used when it comes to COVID-19 situations:

- Isolation of a confirmed case of COVID-19 infection
- Isolation of patient under investigation (PUI)
- Quarantine of high-risk close contact
- Home isolation for PUI who tested negative for COVID-19 infection

When a person is required to stay home and avoid going outside in order to self-monitor whether he/she develops any symptoms until the end of incubation period, this activity is called self-quarantine, or home quarantine, or self-quarantine at home.

However, if a PUI with mild symptoms tested negative for SARS-CoV-2, he/she may be discharged. The activity requiring this patient to stay home for observation until full recovery or for a period of 14 days following the last exposure to the virus is called self-isolation, or self-isolation at home.

As for general communicable diseases, if a person is a carrier, meaning that he/she is carrying the viruses and can spread them to other people despite having no symptoms, separating this individual is aimed at preventing him/her from spreading the viruses to others is deemed an isolation, which must be maintained until the transmission period has lapsed. In practice, the carrier will be placed under isolation to receive treatment until full recovery so as to prevent further spread of the viruses.

Guidelines for Home Isolation for Patient under Investigation (PUI) for COVID-19 infection who tested negative for SARS-CoV-2

Rationale for undergoing 14-day home isolation despite the patient having tested negative for SARS-CoV-2:

As during the early stages of illness, typically a viral load is relatively low and it is likely that the viruses may not be detected. But the patient still has a chance to come down with COVID-19

infection. Given this existing risk, the patient will be advised to undergo home isolation for further observation. If the patient develops more severe symptoms within 48 hours, for instance, having high fever, becoming more tired, oppression in the chest, rapid breathing, shortness of breath, loss of appetite, seek immediate medical care by callingHospital at number, or Department of Disease Control (DDC) Call Center 1422. However, generally COVID-19 infection will become apparently symptomatic and more severe during the second week of infection. If the patient's conditions keep deteriorating, call ambulance service to prevent further spread, or if the patient is taken to hospital in a private car, make sure to leave the car windows open while on the way to hospital.

Patients are advised to:

- Stay home from school or work for at least 14 days after leaving the area affected by the outbreak, or after the date of last exposure to a confirmed case of COVID-19, or stay home for at least one more day after full recovery (i.e. no fever, cough, runny nose) to reduce the spread of the virus.
- In case of fever, take antipyretic, e.g. paracetamol, and other medications to reduce symptoms, for instance, expectorant, cold medication to reduce runny nose, as prescribed by physician or pharmacist.
- Periodically use tepid sponge/cloth to reduce fever. Start rubbing from the arms and legs toward the body, focusing on the forehead, armpits, groin areas, and crook of the arms and legs. Cover the patient's chest with a blanket while rubbing the limbs to prevent the patient from getting too cold. If chills are observed, stop rubbing immediately and put on the blanket to keep the patient warm.
- Drink plenty of potable water and fruit juice. Do not drink cold water.
- Eat mild foods that are easy to digest, e.g. rice porridge, rice congee, egg, and sufficient vegetables and fruits.
- Get plenty of rest in a not-too-cold, well-ventilated room.

For any questions or concerns, please call(hospital's phone number).....

Prevention of household transmission

- Patient should sleep in a separate room. Do not go outside, avoid crowded and public places until at least one day after full recovery to ensure transmission period has passed.
- Eat separately from other members of the household until after full recovery.
- Do not share personal items such as handkerchief, towel, tumbler glass, straw with others.
- Patient should avoid staying in close contact with other household members, especially the elderly and those with underlying medical conditions.
- When in the house with other family members always wear a face mask and keep 1-2 meter distance from others, or at least at arm's length.
- If the patient is having cough, he/she should always wear a face mask.
- If the patient is not wearing a face mask, cough or sneeze into upper sleeve, or cover cough or sneeze with a tissue.

- Throw used face mask or tissue in a plastic bag, tightly seal the bag, and throw it in the trash. Clean hands with alcohol-based hand sanitizer or wash hands with soap and water immediately.
- Patient's caregiver must wear a face mask. After giving care to the patient, the mask must be removed and thrown in the trash. And the caregiver must clean his/her hands with alcohol-based hand sanitizer, or wash hands with soap and water immediately.
- All members of the household should wash their hand as frequently as possible to reduce transmission of the virus.
- Clean and disinfect the patient's living areas, for instance, bed, desk, his/her personal items including bathroom using 5% sodium hypochlorite bleaching agent (ratio of bleaching agent to water 1:99).
- Thoroughly clean and disinfect the toilet and bathroom floor using 5000 ppm sodium hypochlorite by making 5% bleach solution (one part liquid bleach per nine parts water).
- Wash clothes, bed linen, towels, etc. using soap or detergent and water; or alternatively with 60-90 °C hot water.
- Keep monitoring symptoms of close contacts of the patient or members of the household for 14 days after exposure to the patient.

Note: In case the patient or his/her close contact is a breastfeeding mother, she can still continue to breastfeed her child as the virus is minimally shed in breast milk. However, the mother should always wear a face mask and properly wash her hands before and after breastfeeding her child.

Guidelines for Home Quarantine for High-Risk Close Contact of Patient with COVID-19

Close contact is advised to:

- Stay home from school or work for 14 days following exposure to COVID-19 case.
- Sleep in a separate room. Do not go outside, avoid crowded and public places.
- Eat separately from other members of the household.
- Not share personal items such as handkerchief, towel, tumbler glass, straw with others.
- If the close contact is having cough, he/she should face mask at all times
- If not wearing face mask, cough or sneeze into his/her upper sleeve, or cover his/her cough or sneeze with a tissue
- Throw used face mask and tissue in a plastic bag, tightly seal the bag and throw it in the trash. And rub his/her hands with alcohol-based hand sanitizer, or wash hands with soap and water immediately.
- When in the house with other family members always wear a face mask and keep 1-2 meter distance from others, or at least at arm's length.

- Patient should avoid staying in close contact with other household members, especially the elderly and those with underlying medical conditions.
- All members of the household should wash their hand as frequently as possible to reduce transmission of the virus.
- Wash clothes, bed linen, towels, etc. using soap or detergent and water; or alternatively with 60-90 °C hot water.
- Keep monitoring symptoms of close contacts of the patient or members of the household for 14 days after exposure to the patient by taking their temperature and reporting it to the disease investigation team on a daily basis.

Note: In case the patient or his/her close contact is a breastfeeding mother, she can still continue to breastfeed her child as the virus is minimally shed in breast milk. However, the mother should always wear a face mask and properly wash her hands before and after breastfeeding her child.

Hospital/disease investigation team will be closely monitoring your symptoms. If you get sick or have any questions or concerns, please call(hospital number).....

Appendix G

Guidelines for Detection and Investigation of the Outbreaks of COVID-19 among Cluster of Patients with Acute Respiratory Tract Infection (ARI)

Guidelines for Detection and Investigation of the Outbreaks of COVID-19 Infection among Cluster of Patients with Acute Respiratory Tract Infection (ARI)

Background:

Based on the situations in other countries, it was found that prior to widespread transmission of COVID-19 infection, there had been reports of small clusters among, for instance, family members, workplaces, or communities. If these outbreak clusters are not detected and contained in a timely manner, this will consequently lead to widespread transmission. Given this fact rapid detection of small clusters of COVID-19 infection will be a critical component for stemming a further spread of the viruses.

As patients with COVID-19 infection typically experience mild symptoms, surveillance for respiratory tract infections will play an important role in the identification of patients with mild symptoms. Whenever a cluster of respiratory tract infections with no known etiology is detected, a potential outbreak of COVID-19 should never be ruled out.

Objectives:

- 1) To detect a cluster outbreak of COVID-19 infection
- 2) To rapidly contain the spread of COVID-19 infection and prevent widespread transmission

Definitions for surveillance to detect a cluster outbreak of COVID-19 infection:

Cluster of >5 patients with acute respiratory tract infection (ARI) detected in the same place during the same week, whose rapid test or PCR results came back negative for influenza viruses for all tested specimens.

Specimen collection:

Once an ARI cluster as defined above is detected, disease investigation should be initiated and rapid test for influenza viruses performed immediately while disease investigation is being conducted.

- If at least one patient tested positive for influenza virus, routine influenza investigation

should be performed (e.g. specimen collected for viral characterization by PCR) and routine disease control measures implemented.

- If none of the patients tested positive for influenza virus, specimen should be collected from 10 percent of the patients in the cluster who are apparently symptomatic on the date of disease investigation (at least 3 patients but not exceed 10) for the following laboratory tests.
 - PCR for influenza virus *and*
 - PCR for SARS-CoV-2 (according to guidelines for specimen collection and laboratory testing for patient under investigation (PUI))

Patient isolation pending laboratory results:

1. All patients with respiratory tract infections will be instructed to stay home and wear face mask at all times (patient will be provided with face masks by investigation team). Patients will also be asked to undergo self-isolation pending laboratory results for COVID-19 infection.
2. In the event that home isolation is not possible, an isolation area should be designated to accommodate the patients, who will be asked to wear a face mask at all times while being placed under self-isolation until laboratory results become available.

Note: Results of SARS-CoV-2 PCR are expected within 12 hours of the specimen being received by the laboratory. It is important for health facilities and health authorities in the province to work closely with its respective ODPC to ensure timely delivery of quality specimens.

Recommended course of action after obtaining PCR results:

Scenario 1. None of the patients tested positive for SARS-CoV-2 and at least one patient tested positive for influenza virus. In this case, routine disease control measures for influenza should be implemented for this particular cluster of patients.

Scenario 2. At least one patient tested positive for SARS-CoV-2. In this case, the guidelines for investigation of cluster outbreaks of COVID-19 infection should be implemented.

Scenario 3. None of the patients tested positive for SARS-CoV-2 or influenza virus. Specimen collection will be repeated for the same patients who still remain symptomatic 48 hours apart from the first specimen collection. In addition, specimens will also be obtained for SARS-CoV-2 PCR from 3-5 more patients who are apparently symptomatic. If laboratory results all came back negative for SARS-CoV-2 it can be concluded that the cluster outbreak was not caused by SARS-CoV-2 and, in this case, further tests will be routinely performed to identify other pathogens.

Guidelines for investigation of cluster outbreaks of COVID-19 infection

Upon detection of a cluster outbreak of COVID-19 infection, the following procedures should be followed:

- 1) Follow all high-risk and low-risk close contacts of a probable or confirmed case of COVID-19 infection and observe the guidelines for contact tracing (*refer to the guidelines for surveillance*)

and investigation of COVID-19 infection).

- 2) In case there is a large number of high-risk close contacts and it is not possible to have an effective home quarantine, designated quarantine areas may be set up to accommodate these close contacts (*refer to the guidelines for management of case isolation for observation of symptoms*).
- 3) Initiate active case finding in the community/the area affected by the outbreak as follows:
 - Target populations for active case finding
All those who live, work, study, or go about their daily life in the same community, the same place as the patient, e.g. the same department/floor, school, living quarters (military barrack, prison)
 - Case definition for active case finding purposes
Suspected case includes individuals with documented temperature >37.5 °C or history of fever accompanied by one of the following symptoms: cough, runny nose, sore throat, shortness of breath within 14 days prior to illness onset of an index case until 28 days following the detection of the last confirmed case of COVID-19 infection.

Note: The term “suspected case” will apply to patients identified through active case finding in the community (in addition to those identified as part of contact tracing) following the detection of a confirmed case of COVID-19 in the community.

- 4) All suspected cases who remain symptomatic on the date of disease investigation should have specimen collected to test for SARS-CoV-2 (guidelines for specimen collection for PUIs should be followed). As for suspected cases who have shown no signs and symptoms, no specimen collection is needed.
- 5) All suspected cases, whether symptomatic or not, should be quarantined (stay home from work/school) for at least 14 days starting from the date of onset of symptoms, despite full recovery or negative test results. In the event that a large number of suspected cases are identified, a cohort ward may be set up in a hospital, or special facilities designated to accommodate a large number of patients, e.g. field hospital (cohort ward), by reporting to provincial governor and working closely with related supporting agencies such as military barracks, local administration organizations, etc.
- 6) For a suspected case who has fully recovered before the date of disease investigation and did not have specimen collected, high-risk close contacts of the suspected case (e.g. family members, co-workers who had close interaction with the suspected case) should be asked about their symptoms. If those close contacts have developed symptoms, specimens should also be obtained to test for SARS-CoV-2.
- 7) Public events involving large gathering or movement of people should be called off for 28 days after detection of the last confirmed case of COVID-19 infection.
- 8) Disinfect the area where the outbreak has occurred or related to the outbreak following the guidelines provide by the Ministry of Public Health (MOPH).
- 9) Consider closing the places/venues as appropriate if there is a sustained outbreak for >14 days following the detection of index case.
- 10) Prospective surveillance will be carried out for the next 28 days following the detection of the last confirmed case of COVID-19 infection. During this period, any individuals who meet the PUI criteria will have specimen collected to test for SARS-CoV-2.

Preparedness efforts:

- 1) Measures to be implemented will be communicated with relevant health agencies to ensure well-coordinated efforts in the surveillance of ARI cluster outbreaks.
 - As for outbreak detection in closed facilities such as educational institutions, health facilities, charity homes, military facilities, prisons, nursing homes, businesses (hotels, department stores, tutorial schools, and other business operators), meeting will be held among government agencies or relevant private organizations, or official letters may be sent out to request cooperation, or public announcement may be made in each province, or public awareness campaign may be launched via social media. For particular closed facilities such as prisons, military barracks, and charity houses, an isolation area should be designated to accommodate the patients.
 - As for outbreak detection in the communities, meetings of health volunteers may be held to brief them on the guidelines for surveillance of a cluster outbreak of acute respiratory tract infection (ARI) in their community.
- 2) Personal protective equipment (PPE) for use by the outbreak investigation team during the investigation of an ARI cluster outbreak of unknown etiology
 - 1) All members of the outbreak investigation team must take droplet and contact Precautions using a face mask as a minimum requirement.
 - 2) Only staff involved in specimen collection will be required to use PPE according to the Guidelines for Investigation of Patient under Investigation (PUI) for COVID-19 infection.
 - 3) Try to minimize the number of staff involved in the outbreak investigation.
- 3) Disposable face masks for distribution to symptomatic patients
- 4) Each province should maintain a stockpile of influenza rapid tests at a district level or maintain the stockpile at a provincial level and ensure the rapid tests are made readily available for shipment to the districts. The rapid tests will be used for screening purpose in the event of detection of ARI cluster outbreak.
- 5) Each provincial health office (PHO) should prepare isolation rooms or ward in the event a large number of suspected cases of COVID-19 is detected, or consider setting up a special area to accommodate the patients outside of health facility, e.g. field hospital. This response plan should be developed and implemented in collaboration with other supporting agencies in the province such as military unit, provincial office, and local administration organizations.
- 6) Order to close certain places, venues, and facilities will be discussed between local health authorities, administrative agencies, and owners of organizations/businesses, taking into account the number of confirmed cases in the local area, relationship between each patient, and the extent of the closure order.
