



**Philippine Society for Microbiology and Infectious Diseases
and
Philippine Hospital Infection Control Society**

**INTERIM GUIDELINES ON THE INFECTION PREVENTION AND CONTROL
(IPC) FOR COVID-19**

Version 2.0 as of 26 February 2020

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The following guidelines are interim and based on the currently limited information we have about the novel coronavirus up to 20 February 2020. The reader is urged to be updated.

I. CURRENT INFORMATION ON THE TRANSMISSIBILITY OF THE COVID-19:

The knowledge about COVID-19 related to disease severity, transmission efficiency, and shedding duration is still very limited and evolving.

The Lancet article¹ which came out 2/12/2020 summarizes what we know of the COVID-19. The most important points are:

- Genetic analysis early in the outbreak of COVID-19 in China revealed that the virus was similar to, but distinct from, severe acute respiratory syndrome coronavirus (SARS-CoV)².
- The closest genetic similarity was found in a coronavirus that had been isolated from bats².
- The study of phylogeny of genomic sequences obtained from the specimens of early cases in November and December 2019 indicates the initial infections were zoonotic, or from the animal kingdom².
- However since December 2019, the spread now is clearly driven by human-to-human transmission³.
- The explosive rise in transmission may have resulted from cascades of infection prompted by the massive national and international travel during the Chinese New Year (January 25) holidays of 2020¹.
- The person to person transmission of the virus is mainly by respiratory droplets⁴.
- The COVID-19 Infected individuals produce a large quantity of virus in the upper respiratory tract during a prodrome period, during which time the patients are still well, mobile, and carry on usual activities. The mild upper respiratory tract infection (URTI) in an otherwise well person contributes to the rapid spread of the infection¹.
- Some evidence about the presence of the virus in diarrhea specimens⁵.
- In general the virus is shed in significant amounts, and thus communicable, at the time that the infected individual show symptoms and signs of illness⁶. There is usually a brief period, about 24 hours prior to onset of symptoms when the sick person may also be shedding the virus already, but this is believed to be insignificant at this time.
- The mean incubation period is 4.5 days (CI: 3.7-5.6) with the 95th percentile of 8.0 days (CI: 6.3-11.8)⁷. Some series showed up to 11 days⁸. Therefore the two-week period for incubation period set by the WHO is the time duration best to use for isolation and quarantine activities.

II. IPC for COVID-19 in HEALTHCARE FACILITIES:

A. The VITAL ROLE OF THE INFECTION CONTROL COMMITTEE:

The healthcare facility must have an **organized Infection Control Committee (ICC)** in command of the processes related to the screening, triaging, diagnosis, management and disposition of patients suspected and / or confirmed to have COVID-19.

Under the DOH AO 2016-002⁹: “National Policy on Infection Prevention and Control in Healthcare Facilities” all health facilities must have an ICC.

Recent Department Circulars 2020-0014¹⁰ and 0023¹¹ mandating all Level 2 and 3 facilities to attend to all PUIs imply the need for a strong ICC to lead in the preparations to capacitate their own hospitals to respond to the global and national threats of the COVID-19. Each ICC is in the best position to adjust these guidelines to their hospital's human and material resources to create their own policies accordingly.

B. WHO ARE THE HEALTHCARE WORKERS in the COVID-19?

The healthcare worker (HCW) refers to all persons, paid and unpaid, working in healthcare settings engaged in patient care activities, including: patient assessment for triage, entering examination rooms or patient rooms to provide care or clean and disinfect the environment, obtaining clinical specimens, handling soiled medical supplies or equipment, and coming in contact with potentially contaminated environmental surfaces. This definition is adapted from the US CDC¹².

C. Hospital administration guided by the ICC must provide strong **administrative controls** for the policy implementation.

a. **TRIAGING:** A special triaging system must be put in place that will allow systematic assessment of all individuals who enter the health facility at key strategic facility gates and entrances.

i. Triage measures are very important as it will immediately identify persons who may have the COVID-19 as soon as they enter the health facility.

- ✓ Triage includes a system for assessing all patients, visitors, families, staff and others presenting at admission, allowing early recognition of possible COVID-19 infection and immediate isolation of patients with suspected infection in an area separate from other patients.
- ✓ Ensure that patients are asked about travel history, exposure to COVID patients, fever and respiratory manifestations.
- ✓ Triage reduces the unnecessary mixing of persons who may have the highly communicable disease with large numbers of other patients who are ill with other problems, some of whom may be immunocompromised. Examples to **avoid** are: Patients with COVID-19 waiting at a very crowded outpatient department waiting area; patients with travel history or significant exposure history are brought into a crowded emergency room without passing through a triage mechanism.
- ✓ To facilitate the early identification of cases of suspected COVID-19, healthcare facilities should:
 - Identify an efficient mechanism to separate persons who may have COVID-19 from the general population of visitors and regular patients;
 - The triage should be manned and supported by staff trained in screening and assessing patients efficiently without unduly causing traffic in entrances;
 - Institute the use of screening questionnaires according to the updated case definitions;

- Consider having a fast lane for persons who will self-report significant travel history, exposure and other pertinent information. Have signages instructing persons where to go, which line to take.;
 - Consider having a thermal scanning system;
 - To immediately alert visitors, new patients and hospital staff, posting signages and posters about COVID-19 at the entrance and in strategic places (i.e. outpatient clinics, waiting areas, elevators, cafeterias, corridors) is recommended;
 - It may be necessary to have translations of the signages to various languages to cater for foreign travelers ie. Chinese dialects.
- ✓ Each health facility may modify its screening system according to their own risk and needs assessment.
 - ✓ **Immediately provide a surgical mask to all persons identified to have risks for the COVID-19.** Be ready to teach them how to properly wear the surgical mask.
 - ✓ The posters can also provide patients and staff with instructions and reminders about hand hygiene, respiratory hygiene, and cough etiquette.
- iii. The medical, nursing and paramedical healthcare worker (HCW) staff who will care for COVID-19 patients must be identified and trained prior to the first case admitted to the facility. A mandatory infection control orientation should be arranged.
- ✓ HCWs need to be alerted ahead of time that they will be part of the COVID-19 team in their hospitals so that they are physically and psychologically prepared to do the special task of caring for persons with highly communicable disease.
 - ✓ Heads of clinical departments, nursing, emergency medicine, and the ICC should be the best persons to identify competent HCWs to be the frontliners for this outbreak response.
 - ✓ Where possible, a dedicated team of HCWs should be designated to care exclusively for suspected or confirmed cases to reduce the risk of transmission.
 - ✓ All identified staff must undergo IPC training or refresher courses particularly on PPE use.
 - ✓ The ICC is in-charge of training all staff on IPC for the COVID-19.
- iv. All HCW who will care for PUIs and confirmed cases must have proficiency in the use of PPEs.
- ✓ It is of **utmost importance that every HCW is very skillful on how to properly don and remove PPEs.**

- ✓ Any breach in IPC will lead to the possibility of contracting the COVID-19. infection. Trivial actions such as touching the eyes has been identified as the cause of infections in HCWs during the SARS experience¹³.
 - ✓ It is recommended that the HCW must show proof that he/she knows how to wear the PPEs according to recommendations.
- v. There is a reliable mechanism in the hospital to **ensure stocks of materials for hand hygiene as well as PPEs** for all the HCWs at all times.
- ✓ The ICC will provide a forecast on the volume of alcohol and PPEs needed over the next period.
 - ✓ The proper administrative offices such as finance, budget, purchasing in coordination with the ICC should take care procuring forecasted number of PPEs necessary to assure the institution that there will be enough.
 - ✓ The paperwork for procurement of PPEs should be delegated to administrative offices so that clinicians and ICC nurses can concentrate on training and supervision of clinical care of COVID-19.
- vi. The hospital should **safeguard HCW safety** by having in place policies that ensures provision of PPEs, continuous monitoring of the health status of frontline HCWs for the development of new symptoms and assurance that he/she will receive proper medical care should he/she become ill.
- ✓ The hospital clinic will be responsible for monitoring every HCW who will be involved in the COVID-19 team. HCW will monitor his/her temperature twice daily and voluntarily report any reading of 38 or higher.
 - ✓ The hospital will follow benefits and entitlements included in the DOLE Labor Advisory No. 04 Series of 2020¹⁴.
- c. **Engineering controls** are in place so that areas assigned to screen and admit patients are safe, adequate and contains the infectiousness of the COVID-19.
- i. Healthcare facilities should have hand hygiene supplies in all areas of the facility.
- ii. The triage must be a safe area for HCWs and all persons who undergo the screening procedures.
- ✓ The triage area can be designed so that it is easy to access by patients who may be PUIs but also far enough from general people traffic.
 - ✓ Ventilation must be adequate. Adequate ventilation in health facilities means at least 12 air exchanges per hour⁴.
 - ✓ The distance between patients must be at least 3 feet apart to prevent contamination of infected and non-infected patients.
 - ✓ The triage area should have posters for PUIs and PUMs with instructions about respiratory etiquette such as how to properly wear facemasks, proper use of tissues to cover nose and mouth when coughing or sneez-

ing, proper disposal of tissues and contaminated items in waste receptacles, and how and when to perform hand hygiene.

- iii. The identified COVID-19 area should be a safe area with adequate ventilation to ensure smooth admission of patients under investigation (PUI).
 - ✓ The PUIs should be admitted to single rooms.
 - ✓ If airconditioned, the air system must be isolated and not centralized.
 - ✓ Adequate ventilation means at least 12 air exchanges per hour. This can be achieved by mechanical system such as electric fan or exhaust.
 - Negative pressure system is ideal but not required for the PUI areas.
 - ✓ Visitors should be limited to at most one selected family member only.
 - ✓ Only essential HCWs should enter these rooms. Keep to the minimum the number of HCWs needed for the care of the PUIs.
- iv. Once confirmed, a patient with COVID-19 infection should be managed in a single room.
 - ✓ The door which connects the room to the corridor should always be closed.
 - ✓ The identified COVID-19 rooms should have adequate ventilation.
 - ✓ If the health facility has a negative pressure room, this is the room most ideal to place confirmed COVID-19 cases.
 - ✓ If negative pressure rooms are not available, the identified room should have ventilatory capacity that allows at least 12 air exchanges. Based on previous experiences, this ventilation requirement can be achieved by manipulating the windows and exhaust fans¹⁵:

Table1. Air Exchanges Recommendations for Different Room Conditions

Room conditions in natural ventilation; no airconditioning	Air Exchanges (ACH)
Completely open window + closed door	15.1-31.4
Half-open window + closed door	10.5-24
Room condition with exhaust fan	Air Exchanges (ACH)
Exhaust fan is ON + closed door + open windows	14.6
Exhaust fan is ON + closed door + closed window	12.6

Exhaust fan is OFF + closed door+ open windows	14.0
Exhaust fan is OFF + closed door+closed window	0.71

- ✓ Open windows or use of electric fans or exhaust fans allow for the rapid dilution of contaminated air into the surrounding areas and the open air.
- ✓ The airflow should be directed to areas where no people stay or pass by. Therefore it may be necessary to reroute usual traffic movement of persons in the hospital vicinity so that the public is not exposed to contaminated air from the COVID-19 patient rooms.
- ✓ Patients should not be placed in rooms where airconditioning is centralized. There should be no mixing of air from suspected or confirmed COVID-19 cases with other patients.

- ✓ If the number of single rooms are not sufficient for the number of confirmed COVID-19 cases, it is possible to cohort these patients.
 - These special arrangements need to be explained to both staff and patients.
 - The distance of 1 meter apart must be maintained between patients' beds within the cohort area.
 - Equipment such as BP cuff and stethoscope should not be shared as much as possible or should be decontaminated properly if sharing is unavoidable.
 - Ideally, a dedicated experienced and trained personnel should be assigned for that area (at least one person per shift).
 - Limit entry to the area to personnel who are vital for patient care and support only.
- ✓ Certain procedures require special arrangements:
 - **Collection and Transport of Specimens¹⁶:**
 - The necessary nasopharyngeal and oropharyngeal specimens as well as other body fluids for diagnostic workup such as blood tests, sputum GS CS and others should be handled as potentially infectious.
 - HCWs who collect these specimens should use appropriate PPE (i.e., eye protection, at least a surgical mask, a long-sleeved gown, gloves).
 - If the specimen is collected with an aerosol-generating procedure (bronchoscope, intubation), HCW should wear an N95 mask;

- Ensure that all personnel who transport specimens to the RITM laboratories are trained in safe handling practices and spill decontamination procedures. The specimen should be transported in leak-proof specimen bags (i.e., secondary containers) that have a separate sealable pocket for the specimen (i.e., a plastic biohazard specimen bag), with the patient's label on the specimen container (i.e., the primary container), and a clearly written laboratory request form.
 - To avoid confusion, the process of getting the test medium and the arrangement for staff to transport to the RITM should have been pre-arranged already for weekday and weekend specimen collections.
- d. The appropriate Isolation Precautions¹⁷ must be implemented. **Personal protective equipment (PPE)** must be continuously available to healthcare workers who will be caring for all patients suspected or confirmed to have the COVID-19.
- i. **Standard precautions** should be observed for all patients. Its most important component is **hand hygiene**.
 - ✓ HCWs should perform hand hygiene using alcohol or alcohol-based hand rub before and after all patient contact, contact with potentially infectious material, and before putting on and upon removal of PPE, including gloves.
 - ✓ Hand hygiene in healthcare settings also can be performed by washing with soap and water for at least 20 seconds (CDC) specially when hands are visibly soiled.
 - ii. In addition to using standard precautions, all individuals, should use **contact and droplet precautions**⁴ before entering the room where suspected or confirmed COVID-19 patients are admitted.
 - ✓ HCWs should use N95 masks, wear eye protection (goggles) or facial protection (face shield) to avoid contamination of mucous membranes, wear clean, non-sterile, long-sleeved gowns, and gloves.
 - ✓ The use of boots, coverall and apron is NOT required during routine care.
 - ✓ After patient care, appropriate doffing and disposal of all PPEs and hand hygiene should be carried out. A new set of PPEs is needed, when care is given to a different patient.
 - ✓ Equipment should be either single-use and disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect it between use for each individual patient (e.g., by using 70% ethyl alcohol).
 - ✓ HCWs should refrain from touching eyes, nose or mouth with potentially contaminated gloved or bare hands.

- ✓ Avoid moving and transporting patients out of their room or area unless medically necessary. Use designated portable X-ray equipment and/or other designated diagnostic equipment. If transport is required, use predetermined transport routes to minimize exposure for staff, other patients and visitors, and have the patient use a medical mask.
 - ✓ Ensure that HCWs who are transporting patients perform hand hygiene and wear appropriate PPE as well.
 - ✓ Notify the area receiving the patient of any necessary precautions as early as possible before the patient’s arrival.
 - ✓ Routinely clean and disinfect surfaces which the patient has come in contact with.
 - ✓ Limit the number of HCWs, family members and visitors who are in contact with a suspected and confirmed COVID-19 patient.
 - ✓ It’s important to maintain a record of all persons entering the patient’s room, including all staff and visitors.
- iii. The minimum required PPEs depend on the tasks of the persons involved in the process.
- iv. Routine care for the suspected and confirmed COVID-19 patients requires standard, droplet and contact precautions from triage to inpatient care.
- v. Care of confirmed cases where aerosols are generated requires step-up to airborne precautions.

Table 2. Suggested PPEs According to Tasks

TASK	PERSON TASKED	Surgical Mask	N95 Mask	Clean Gloves	Gown	Goggles or Face Shield	Boots/ Shoe Cover	Cap/ Haz mat
Screening persons at the Hospital gates	Screeners Security personnel	YES	NO	NO	NO	NO	NO	NO
Thermal Scanning	Screeners Security personnel	YES	NO	NO	NO	NO	NO	NO
Triaging Stable Persons for possible PUI	Doctors Nurses	YES	YES N95 an option	YES	YES	YES	NO	NO
Initial evaluation unstable PUIs at the triage area	Doctors Nurses	NO	YES	YES	YES	YES	NO	NO

Ambulance conduction possible PUIs	Paramedics Ambulance driver	NO	YES	YES	YES	YES	NO	NO
Collection of NPS OPS	Trained MD or RN	NO	YES	YES	YES	YES	NO	NO
Transport of PUI or confirmed nCoV	Utility worker	NO	YES	YES	YES	YES	NO	NO
Disinfection of Patients Room	Utility Worker or Janitorial	NO	YES	YES	YES	YES	NO	NO
Cleaning of Patients Bathrooms	Utility Worker or Janitorial	NO	YES	YES	YES	YES	YES Boots	YES

- vi. The proper use, how to don and doff the specific PPEs to prevent self-contamination are as follows:
- The order for putting on PPE after performing Hand Hygiene is Gown, Surgical or N95 Mask, Eye Protection and Gloves.
 - The order for removing PPE is Gloves, Gown, Eye Protection, Surgical or N95 Mask. Perform hand hygiene immediately on removal.
 - **Gowns**
 - Put on a clean isolation gown upon entry into the patient room or area.
 - Put on the long sleeved single use fluid resistant **GOWN** with the opening to the back. Tie at the back of neck and waist.
 - Make sure the gown covers skin and clothing
 - Change the gown if it becomes soiled. Remove and discard the gown in a dedicated container for waste or linen before leaving the patient room or care area. Disposable gowns should be discarded after use. Cloth gowns should be laundered after each use.
 - **Respiratory Protection**
 - WHO recommendations⁴ advise that surgical mask is sufficient for protection against droplet transmission. Secure loops or ties. Shape metal piece to the bridge of your nose.
 - When caring for confirmed COVID-19 cases specially when patients are vigorously coughing and when performing aerosol-generating procedures (endotracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation, and bronchoscopy), use disposable N95 before entry into the patient room or care area⁴. Perform seal check.

- Disposable respirators should be removed and discarded after exiting the patient’s room or care area and closing the door. Perform hand hygiene after discarding the respirator.
 - **Eye Protection**
 - Put on eye protection (e.g., goggles, a disposable face shield that covers the front and sides of the face) upon entry to the patient room or care area. Remove eye protection before leaving the patient room or care area. Reusable eye protection (e.g., goggles) must be cleaned and disinfected according to manufacturer’s reprocessing instructions prior to re-use. Disposable eye protection should be discarded after use.
 - **Gloves**
 - Put on clean, non-sterile gloves upon entry into the patient room or care area. Pull gloves over gown cuffs. Change gloves if they become torn or heavily contaminated.
 - Remove contaminated gloves by grasping at the palm and pulling the glove inside-out. Scoop under the second glove and remove. Place gloves in yellow garbage bags when leaving the patient area, and immediately perform hand hygiene.
- vii. Unless changed in future date, PPEs are single use and disposed after use in one patient.
- viii. The usage of the PPEs must be balanced between the HCW safety and the resources available.
- ix. If a sufficient supply of respirators is not available, healthcare facilities may consider extended use or reuse as long as the device has not been obviously soiled or damaged (eg. creased or torn). **Data on reuse of respirators for the COVID-19 are not available.** Reuse may increase the potential for contamination; however, this risk must be balanced against the need to fully provide respiratory protection for healthcare personnel^{18,19,20}.
- ✓ *Extended use refers to the practice of wearing the same N95 respirator for repeated close contact encounters with several patients, without removing the respirator between patient encounters. Extended use may be implemented when multiple patients are infected with the same respiratory pathogen and patients are placed together in dedicated waiting rooms or hospital wards. Extended use has been recommended as an option for conserving respirators during previous respiratory pathogen outbreaks and pandemics.*
 - ✓ *Reuse refers to the practice of using the same N95 respirator for multiple encounters with patients but removing it (‘doffing’) after each encounter. Even when N95 respirator reuse is practiced or recommended, restrictions are in place which limit the number of times the same N95 mask can be reused. Respirator reuse is often referred to as “limited reuse”. Limited reuse has been recommended and widely used as*

an option for conserving respirators during previous respiratory pathogen outbreaks and pandemics.

- ✓ *The decision to implement these practices should be made on a case by case basis taking into account respiratory pathogen characteristics (e.g., routes of transmission, prevalence of disease in the region, infection attack rate, and severity of illness) and local conditions (e.g., number of disposable N95 respirators available, current respirator usage rate, success of other respirator conservation strategies, etc.). Some healthcare facilities may wish to implement extended use and/or limited reuse before respirator shortages are observed, so that adequate supplies are available during times of peak demand.*
- ✓ *Extended use is favored over reuse because it is expected to involve less touching of the respirator and therefore less risk of contact transmission.*
- ✓ *A key consideration for safe extended use is that the respirator must maintain its fit and function. Workers in other industries routinely use N95 respirators for several hours uninterrupted. Experience in these settings indicates that respirators can function within their design specifications for **8 hours of continuous or intermittent use**. Some research studies have recruited HCWs as test subjects and many of those subjects have successfully worn an N95 respirator at work for several hours before they needed to remove them. Thus, the maximum length of continuous use in non-dusty healthcare workplaces is typically dictated by hygienic concerns (e.g., the respirator was discarded because it became contaminated) or practical considerations (e.g., need to use the restroom, meal breaks, etc.), rather than a pre-determined number of hours.*
- ✓ *If extended use of N95 respirators is permitted, respiratory protection program administrators should ensure adherence to administrative and engineering controls to limit potential N95 respirator surface contamination (e.g., use of barriers to prevent droplet spray contamination) and consider additional training and reminders (e.g., posters) for staff to reinforce the need to minimize unnecessary contact with the respirator surface, strict adherence to hand hygiene practices, and proper Personal Protective Equipment (PPE) donning and doffing technique.*
- ✓ *Healthcare facilities should develop clearly written procedures to advise staff to take the following steps to reduce risk despite extended use:*
 - *Discard N95 respirators following use during aerosol generating procedures.*
 - *Discard N95 respirators contaminated with blood, respiratory or nasal secretions, or other bodily fluids from patients.*
 - *Discard N95 respirators following close contact with, or exit from, the care area of any patient co-infected with an infectious disease requiring contact precautions.*

- Consider use of a cleanable face shield (preferred) or a surgical mask over an N95 respirator and/or other steps (e.g., masking patients, use of engineering controls) to reduce surface contamination.
- Perform hand hygiene with soap and water or an alcohol-based hand sanitizer before and after touching or adjusting the respirator (if necessary for comfort or to maintain fit).
- Extended use alone is unlikely to degrade respiratory protection. However, healthcare facilities should develop clearly written procedures to advise staff to:
- Discard any respirator that is obviously damaged or becomes hard to breathe through.

e. Other Infection Control Issues

i. Disinfection of Patient Areas after Discharge:

- ✓ The WHO recommends alcohol and bleach for decontamination²¹.
 - **Ethyl alcohol (70%)** is a powerful broad-spectrum germicide and is considered generally superior to isopropyl alcohol. Alcohol is often used to disinfect small surfaces (e.g. rubber stoppers of multiple-dose medication vials, and thermometers) and occasionally external surfaces of equipment (e.g. stethoscopes and ventilators). Since alcohol is flammable, limit its use as a surface disinfectant to small surface-areas and use it in well-ventilated spaces only. Prolonged and repeated use of alcohol as a disinfectant can also cause discoloration, swelling, hardening and cracking of rubber and certain plastics.
 - **Bleach** is a strong and effective disinfectant with sodium hypochlorite as the active ingredient. It is effective in killing bacteria, fungi and viruses, including influenza virus - but it is easily inactivated by organic material. Diluted household bleach disinfects within 10-60 minutes contact time, is widely available at a low cost, and is recommended for surface disinfection in health-care facilities. However, bleach irritates mucous membranes, the skin and the airways; decomposes under heat and light; and reacts easily with other chemicals. Therefore, bleach should be used with caution; ventilation should be adequate and consistent with relevant occupational health and safety guidance. Improper use of bleach, including deviation from recommended dilutions (either stronger or weaker), may reduce its effectiveness for disinfection and can injure HCWs. In decontaminating environmental surfaces: A 1:10 - 1:100 dilution of 5.25% - 6.15% sodium hypochlorite has been recommended for environmental decontamination (Guidelines for Disinfection and Sterilization in Healthcare Facilities, 2019 Update).
- ✓ Clean horizontal surfaces in isolation rooms or areas - focusing particularly on surfaces where the patient has been lying or has frequently

touched, and immediately around the patient's bed - regularly and on discharge.

- ✓ To avoid the possible generation of infectious aerosols, use damp cleaning (moistened cloth) rather than dry dusting or sweeping.
- ✓ During wet cleaning, cleaning solutions and equipment soon become contaminated; change cleaning solutions, cleaning cloths and mop heads frequently, according to health-care facility's policies.
- ✓ Ensure that equipment used for cleaning and disinfection is cleaned and dried after each use.
- ✓ Launder mop heads daily and dry them thoroughly before storage or re-use.
- ✓ To facilitate daily cleaning, keep areas around the patient free of unnecessary supplies and equipment.
- ✓ Do not spray (i.e. fogging) occupied or unoccupied rooms with disinfectant; this is a potentially dangerous practice that has no proven disease-control benefit.
- ✓ If equipment is reused, follow general protocols for disinfection and sterilization.
- ✓ If not visibly soiled, wipe external surfaces of large portable equipment (e.g. X-ray machines and ultrasound machines) that has been used in the isolation room or area with an approved hospital disinfectant upon removal from the patient's room or area.
- ✓ If a room is used for a procedure it should be left for 20 minutes, cleaned before it can be ready for re-use. This is because the large particles will fall out within seconds and the small aerosol particles will behave almost as a gas. Clearance of any aerosol is dependent on the ventilation of the room. In hospitals this is usually around 12-15 air changes per hour, and so after about 20 minutes there would be less than 1 per cent of the starting level (assuming cessation of aerosol generation). This is to allow the removal of 99.9% airborne contaminants in the air.

ii. Management of Linen of COVID-19:

- ✓ Standard Precautions apply to the handling of linen from patients with confirmed or suspected 2019-nCoV²².
- ✓ Clean linen is to be stored outside patient rooms. Any unused linen in the patient's room is not to be returned to general use.
- ✓ Soiled linen is to be deposited directly into a laundry bag in the patient's room. The linen bag should not be overfilled. Ensure the bag will not open or burst during linen transport or storage.
- ✓ Wear gloves and fluid resistant long-sleeved gown when directly handling soiled linen and other laundry. Do not shake the laundry or otherwise cause aerosolization of infectious particles. Wear gloves when transporting used bagged linen and other laundry.

- ✓ Perform hand hygiene after removal of gloves after contact with soiled linen and laundry.
- ✓ There is no need to wear surgical or N95 masks or protective eyewear when handling bagged laundry.

iii. Waste Management in COVID-19:

- ✓ Staff engaged in environmental cleaning and waste management should wear appropriate PPE as above.
- ✓ All waste should be treated as infectious clinical waste and handled according to healthcare facility policies and discarded into yellow bags.

f. Healthcare Worker Surveillance after Caring for Confirmed Cases of the COVID-19

- i. The following discussion seeks to clarify and qualify how to assess the HCW risk after he or she has cared for a confirmed case of COVID-19.
- ii. In the DOH Advisory No 3 dated February 2, 2020²³ entitled Assessment of Patients in response to 2019 novel Coronavirus Acute Respiratory Disease (2019nCoV ARD) Health Event, the history of exposure to confirmed COVID-19 patient or persons under investigation for COVID-19 in the past 14 days prior to onset of symptoms. may include the following: Providing care for and/or handling specimens of confirmed COVID-19 patient or persons under investigation for COVID-19 - which actually describes the HCWs.
- iii. **We clarify that HCWs who have taken recommended infection control precautions, including the use of full PPE, while caring for a symptomatic confirmed 2019-nCoV case are not considered to be close contacts²⁴.**
- iv. However, these HCWs should be advised to monitor themselves including twice daily temperature monitoring. If they develop symptoms consistent with COVID-19 they should isolate themselves and notify the health facility ICC so they can be tested and managed as a PUI.
- v. On the other hand, HCWs who failed to use the prescribed PPEs will meet the criteria for COVID-19 close contacts and should be advised not to undertake work in a healthcare setting for 14 days following the last possible contact with the case. They will also be advised to self-quarantine at home for 14 days following the last contact with the case. If they develop symptoms they will be managed as PUI. Symptomatic contacts who test negative for COVID-19 by PCR will still need to be monitored for 14 days after their last contact with a confirmed COVID-19 case and may require re-testing.
- vi. This underlines the importance of ensuring HCWs implement appropriate infection control precautions when assessing and managing PUIs and confirmed 2019-nCoV cases. Breach in IPC cannot be tolerated.
- vii. Therefore, HCWs who remain vigilant about IPC and practice this carefully during the entire period of care for PUIs and confirmed COVID-19 cases do

not need quarantine. While HCWs who in any manner experience a breach in IPC while caring for PUIs or confirmed COVID-19 cases will need to be pulled out from work for a 14-day self-quarantine. In either case, any development of symptoms will require the HCW to undergo testing for the COVID-19.

- viii. The hospital administration may design its own work schedule for HCWs to include these possible developments. Quarantine of HCWs who fulfill criteria for close contacts due to breach in IPC is probably best within the hospital premises ie identified quarters for HCW quarantine.

g. IPC in Handling Bodies of Deceased COVID-19 Patients

i. Handling and Disposal of Deceased:

Contrary to common belief, most organisms do not survive long in the dead human body(WHO).

Nevertheless standard precautions should be implemented for all dead bodies specially deceased COVID-19 patients. Deceased bodies of the 2019 novel coronavirus infected patients are categorized as Category 2²⁵.

General Recommendations for all related personnel who will handle the carcass^{26,27}

- ✓ **When handling of dead bodies:**
- ✓ Category 2 requires the following PPE: Gloves, water resistant gown/ plastic apron over water repellent gown, and surgical mask. Use goggles or face shield to protect eyes, if there may be splashes.
- ✓ Make sure any wounds, cuts and abrasions, are covered with waterproof bandages or dressings.
- ✓ Do NOT smoke, drink or eat. Do NOT touch your eyes, mouth or nose.
- ✓ Avoid sharps injury, both in the course of examination of dead body and afterwards in dealing with waste disposal and decontamination.
- ✓ Remove PPE after handling of the dead body. Then wash hands with liquid soap and water immediately.

Removal of the body from the isolation room or area

- ✓ **Category 2** Signified by a YELLOW label in body bag.
- ✓ **Before transferring the carcass in to the body bag, the following should be done:**
- ✓ All tubes, drains and catheters on the dead body should be removed
- ✓ Extreme caution should be exercised when removing intravenous catheters and other sharp devices. They should be directly disposed into a sharps container.
- ✓ Wound drainage and needle puncture holes should be disinfected and dressed with impermeable material.
- ✓ Secretions in oral and nasal orifices can be cleared by gentle suction if needed.
- ✓ Oral, nasal and rectal orifices of the dead body should be plugged to prevent leakage of body fluids.
- ✓ The body should be cleaned and dried. **EMBALMING is not recommended**

Where to place the carcass?

- ✓ Dead bodies under Category 2 or Category 3:

- ✓ The dead body should be first placed in a robust and leak-proof transparent plastic bag of not less than 150 µm thick, which should be zippered closed. Pins are NOT to be used.
- ✓ A second layer of cover is required.
- ✓ Category 2 - The bagged body should be either wrapped with a mortuary sheet or placed in an opaque body bag.
- ✓ The outside of the body bag should be wiped with 1 in 4 diluted household bleach (mixing 1 part of 5.25% bleach with 4 parts of water) and allow to air dry
- ✓ **Take note: Apply principles of cultural sensitivity. If the family of the patient wishes to view the body after removal from the isolation room or area, they may be allowed to do so with the application of Standard Precautions**

Care of items left behind by the deceased

- ✓ Items left behind by the deceased, like tubes and drains removed from the cadaver and even disposable linens are classified as clinical waste and must be handled and disposed of properly to yellow bag.
- ✓ Used equipment should be autoclaved or decontaminated with disinfectant solutions in accordance with established disinfectant policy.
- ✓ All surfaces which may be contaminated should be wiped with “1 in 49 diluted household bleach” (mixing 1 part of 5.25% bleach with 49 parts of water), leave it for 15-30 minutes, and then rinse with water. Metal surfaces could be wiped with 70% alcohol.
- ✓ Surfaces visibly contaminated with blood and body fluids should be wiped with 1 in 4 diluted household bleach (mixing 1 part of 5.25% bleach with 4 parts of water), leave it for 10 minutes, and then rinse with water.

Postmortem examination

- ✓ Safety procedures for deceased 2019-nCoV cases should be consistent with those used for any autopsy procedure.
- ✓ Engage a minimum number of staff in the procedure, and perform only if:
 - an adequately ventilated room suitable for the procedure is available;
 - and appropriate PPE is available
- ✓ PPE to be provided during autopsy includes:
 - scrub suit - tops and trousers, or equivalent garments;
 - single-use, fluid-resistant, long-sleeved gown;
 - Surgical or N95mask
 - face shield (preferably) or goggles;
 - either autopsy gloves (cut-proof synthetic mesh gloves) or two pairs of nonsterile gloves;
 - knee-high boots

Engineering and environmental controls for autopsy

- ✓ Perform autopsies in an adequately ventilated room.
- ✓ Minimize aerosols in the autopsy room (e.g. during lung excision) by:
 - avoiding the use of power saws whenever possible;
 - avoiding splashes when removing, handling or washing organs, especially lung tissue and the intestines
 - using exhaust ventilation to contain aerosols and reduce the volume of aerosols released into the ambient air environment; exhaust systems around the autopsy table should direct air and aerosols away

- from health-care workers performing the procedure (e.g. exhaust downward).
- ✓ Clean surfaces that have become contaminated with tissues or body fluids and decontaminate by:
 - removing most of the tissue or body substance with absorbent materials;
 - cleaning surfaces with water and detergent;
 - applying the disinfectant standardized by the health-care facility - if sodium hypochlorite solution is used, wet the surface with the solution and allow at least 10 minutes contact time;
 - rinsing thoroughly.
- ✓ To reduce aerosol generation during autopsy:
 - use containment devices whenever possible (e.g. biosafety cabinets for the handling and examination of smaller specimens);
 - use vacuum shrouds for oscillating saws;
 - do not use high-pressure water sprays;
 - if opening intestines, do so under water.
- ✓ For Dead Bodies Under Category II
 - Viewing in funeral parlor and hygienic preparation are allowed.
 - Embalming is NOT allowed.
 - There should be minimal contact with/handling of the dead body. When there is a need to do so, you should:
 - Avoid direct contact with blood or body fluids when handling the dead body.
 - Observe strict personal hygiene and put on appropriate personal protective equipment including gloves, water resistant gown / plastic apron over water repellent gown, and surgical mask. Use goggles or face shield to protect eyes, if there may be splashes.
 - Make sure that any wounds are covered with waterproof bandages or dressings.
 - Do NOT smoke, drink or eat. Do NOT touch your eyes, mouth or nose.
 - Remove personal protective equipment after contact with/handling of the dead body. Then, wash hands with liquid soap and water immediately.

2) IPC FOR COVID-19 in COMMUNITY SETTINGS

- a. Vigilant IPC in the community is as important as observance of IPC in the health facilities. The public is reminded to always follow good hygiene^{4,28,29}. These include:
 - i. Frequent hand hygiene using handwashing with soap and water or use of alcohol-based hand rub.
 - ii. Follow the cough etiquette: cover your cough, use tissue paper and dispose properly
 - iii. Spitting is prohibited.

- b. In general, an individual from the community who feels otherwise well need not wear a surgical mask.
- c. If an individual does not feel well and has fever or respiratory symptoms such as fever, cough, shortness of breath, wear a surgical mask and seek medical consultation.
- d. Certain individuals classified to be low risk Persons under Investigation may not need to be admitted.
- e. 14-day self-quarantine must be done by persons at risk for the COVID-19 infection with care to ensure that potential transmission is kept at minimum level. These include all persons who are **from mainland China and close contacts of confirmed COVID-19 cases.**
- f. A **close contact** is defined as having had:
 - ✓ Greater than 15 minutes face-to-face contact in any setting with a confirmed case in the period extending from 24 hours before onset of symptoms in the confirmed case;
 - ✓ Sharing of a closed space with a confirmed case for a prolonged period (ie. more than 2 hours) in the period extending from 24 hours before onset of symptoms in the confirmed case.
 - ✓ Living in the same household or household-like setting (ie. in a boarding school or hostel).
 - ✓ Direct contact with the body fluids or laboratory specimens of a case without recommended PPE or failure of PPE.
 - ✓ A person who spent 2 hours or longer in the same room (such as a GP or ED waiting room).
 - ✓ A person in the same hospital room when an aerosol generating procedure is undertaken on the case, without recommended PPE.
 - ✓ Aircraft passengers/long bus trip passengers who were seated in the same row as the case, or in the two rows in front or two rows behind a confirmed 2019-nCoV case.
 - ✓ All crew-members on an aircraft who worked in the same cabin area as a confirmed case of COVID-19.

Note that healthcare workers and other contacts who have taken recommended infection control precautions, including the use of full PPE, while caring for a symptomatic confirmed COVID-19 case **are not considered to be close contacts.**

- g. Isolation and restriction: Asymptomatic close contacts should be advised to self-quarantine at home for 14 days following the last contact with the case, and to monitor their health for 14 days after the last possible contact with a confirmed COVID-19 case.

- h. Persons who will be cared for in the community must be educated accordingly by the institutions which send them home ie BOQ, hospital, physician;
- i. Monitoring of close contacts in the community should likewise be efficient, systematic and documented by DOH RESU;
- j. Updating the public in a timely manner will improve their adherence to recommendations and reduce excessive anxiety and fear. PSMID recommends that such information will come **only from reputable sites**. Information from other agencies or individuals should get clearance from the DOH before release. Sources of fake news will not be tolerated.

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