ANNEX 8

THE INFECTION PREVENTION AND CONTROL (IPC) MEASURES WHEN 2019 NOVEL CORONAVIRUS (2019- nCoV) INFECTION IS SUSPECTED

THE INFECTION AND PREVENTION CONTROL GUIDING PRINCIPLES

The principles of IPC for acute respiratory infection patient care include:

a) Early and rapid recognition AND source control that includes promotion of respiratory hygiene

- Early recognition and investigation, prompt implementation of IPC precautions, reporting and surveillance, and supportive treatment to make patients non-infectious by strictly adhering to Interim definitions of the epidemiological AND Clinical Criteria in the case definition
- Post visual alerts (in appropriate languages) at the entrance to outpatient facilities (e.g., emergency departments, physicians' offices, outpatient clinics) instructing patient and the persons who accompany them to inform healthcare personnel of symptoms of a respiratory infection when they first register for care, and practice respiratory hygiene/cough etiquette

b) Application of routine IPC precautions (Standard Precautions) for all patients;

c) Additional precautions in selected patients (i.e. contact, droplet, airborne) based on the presumptive diagnosis;

d) Establishment of an IPC infrastructure for the healthcare facility, to support IPC activities.

e) Provision of adequate and regular supply of PPE and appropriate training of Staff using the PPE serves to further reduce the risks of transmission of respiratory pathogens to health-care workers and other people interacting with the patients in the health-care facility

STANDARD PRECAUTIONS

Standards Precautions are routine IPC precautions that should apply to **ALL** patients, in **ALL** healthcare settings. The precautions, described in detail within Chapter 3 of the 'Policies and Procedures on Infection Prevention and Control – Ministry of Health Malaysia; 2018' are:

a) Hand hygiene before touching a patient; before any clean or aseptic procedure; after body fluid exposure risk; after touching a patient; and after touching a patient's surroundings, including contaminated items or surfaces

b) Use of personal protective equipment (PPE) guided by risk assessment concerning anticipated contact with blood, body fluids, secretions and non-intact skin for routine patient care
c) Respiratory hygiene in anyone with respiratory symptoms

d) Environmental control (cleaning and disinfection) procedures according to standard procedures

e) Waste management according to safe routine practices;

f) Packing and transporting patient-care equipment, linen, laundry and waste from the isolation areas

g) Prevention of needle-stick or sharps injuries;

WHEN DEALING WITH PATIENT UNDER INVESTIGATION (PUI) OF NOVEL CORONAVIRUS (nCoV) OR IN CASES OF CONFIRMED NOVEL CORONAVIRUS (nCoV).

Not much is known regarding the source and mode of transmission of 2019 **NOVEL CORONAVIRUS (2019 nCoV)** ***pneumonia. Based on the experience from Wuhan, Thailand and Hong Kong. CDC confirms the possibility of human to human transmission.***
However the current interim guidelines recommend Airborne, Droplet and Contact transmission based precautions for novel viruses in addition to Standard Precaution. This document will be updated as more information is made available.

1) Before Admission (APPLIES TO HOSPITAL EMERGENCY DEPARTMENTS, HEALTH CLINIC/ PRIVATE GP AREAS)

- Clinical triage - rapid case identification of patients at risk, encourage visual aid, train first line staff on proper travel history taking in patient presenting with fever and cough.

- Dedicated waiting areas for PUI to be well ventilated with spatial separation of at least 1m between patients in the waiting rooms

- Provide tissues/ surgical mask with a no-touch bins for disposal of tissues/biohazard bag

- Provide resources for performing hand hygiene (alcohol based hand rub made available)

- Adequate environmental ventilation and cleaning of high touch areas at waiting and triage areas from time to time and after patient leaves the facility.

- Rapid triage of patients with acute febrile respiratory diseases is recommended.

- Offer surgical (not N95 mask) if patient is able to tolerate (not tachypneic, not hypoxic)

This section is stated in item 3) Personal Protective Equipment (PPE) recommended

o Avoid touching the face, surfaces and objects with contaminated gloves.

2) Patient placement during admission in the hospital

In descending order of preference:

i. Airborne Infection Isolation Room (AIIR)
ii. Single room (nursed with door closed) and en-suite bath
iii. Single room

Cohorting is not recommended at this moment. If need arises, should be done after consulting respective ID physician/Microbiologist

3) Personal Protective Equipment (PPE) recommended

In addition to Standard Precautions, all individuals (visitors and healthcare workers), when in close contact (within 1 metre) or upon entering the room or cubicle of patients, should always wear:

- Fit tested N95 mask or a higher level respirator.
    - Appropriate fit test must be performed
    - Avoid touching the mask
    - Change if soiled / or failed fit test
- Eye protection (goggles or a face shield). Do not use conventional eye glasses as eye protection, because they are not designed to protect against splashes to the eye mucosa.
- A clean, non-sterile, standard isolation gown (fluid-repellent long-sleeved gown). Optional to wear a plastic apron over the gown especially in case of excessive spillage is anticipated.
    - Gloves that cover over the cufflinks of the gown
    - Hand Hygiene
    - Dedicate the use of non-critical patient-care equipment to avoid sharing between clients/patients/residents
        - E.g. stethoscope, sphygmomanometer, thermometer or bedside commode
        - If unavoidable, then adequately clean and disinfect them before use on another client/patient/resident

4) Transporting patients

- Avoid the movement of patients unless medically necessary e.g. use designated portable X-ray equipment instead of bringing patient to radiology.

- If movement of patient is required, use pre planned routes that minimize exposure to other staff, patients and visitors. Notify the receiving area before sending the patient

- Clean and disinfect patient-contact surfaces (e.g. bed) after use

- HCWs transporting patients must wear appropriate PPE as mentioned above

5) PPE When Performing Aerosol-Generating Procedures (Standard And Airborne Precautions)
An aerosol-generating procedure (AGP) is defined as any medical procedure that can induce the production of aerosols of various sizes, including small (< 5 μm) particles. The aerosol-generating procedures include:

- Intubation with or without cardiopulmonary resuscitation- the strongest evidence for needing airborne precaution
- Manual ventilation
- Non-invasive ventilation (e.g., BiPAP, BPAP) – avoid if possible
- Tracheostomy insertion
- Bronchoscopy
- Sputum induction
- Nebulization
- Airborne precaution also recommended when taking oropharyngeal/nasopharyngeal swab

Placement of patients
In descending order of preference:

1. Negative pressure rooms/AIIR room
2. Adequately ventilated room with at least natural ventilation with at least 160 l/s/patient air flow

The AIIR room should meet the following ventilation standards:

- Minimum 12 air changes per hour (ACH)
- Inward directional airflow from adjacent spaces to the room with negative pressure differentials of > - 2.5 Pascal.
- Supply of clean air flowing first to the area of the room where staff or visitors are likely to be present, and then flowing across the bed area to the exhaust.
- Exhaust air directed to outside or HEPA-filtered, if recirculated.
- Room monitored on initiation of use and at least daily when in use.
- Door kept closed at all times when not required for entry and exit.

Recommended PPE

- Powered Air Purifying Respirator (PAPR*) or at least a particulate respirator i.e. fit tested N95 mask (always check the seal)

- Eye protection (goggles or a face shield). Do not use conventional eyeglasses as eye protection, because they are not designed to protect against splashes to the eye mucosa.
- A clean, non-sterile, standard isolation gown (fluid-repellent long-sleeved gown) and gloves (some of these procedures require sterile gloves. Limit the number of persons present to the bare minimum
- Perform hand hygiene before and after contact with the patient and surroundings and after PPE removal

* if available and staff have been trained to use it

6. Specimen collection and transport

All specimens should be regarded as potentially infectious, and health-care workers who collect or transport clinical specimens should adhere rigorously to Standard Precautions, to minimize the possibility of exposure to pathogens.

- Deliver all specimens by hand whenever possible. Do not use pneumatic-tube systems to transport specimens
- State the name of the PUI suspect of potential concern clearly on the accompanying request form. Notify the laboratory as soon as possible that the specimen is being transported
- Ensure that health-care workers who collect specimens from patients with ARIs wear appropriate PPE
- Place specimens for transport in leak-proof specimen bags(please refer to section for instructions on specimen packaging)
- Ensure that personnel who transport specimens are trained in safe handling practices and spill decontamination procedures

7. Disinfection and Sterilization

Environmental cleaning and disinfection is intended to remove pathogens or significantly reduce their numbers on contaminated surfaces and items, thus breaking the chain of transmission. Although we do not know about the viability of the novel Coronavirus in the environment, most bacteria and viruses can be inactivated by the use of standard hospital disinfectants**.**

- No disinfection is required for surfaces and equipment that do not come into direct contact with patients. These surfaces or equipment should be thoroughly cleaned between patients.

- Clean and disinfect surfaces that are likely to be contaminated with pathogens, including those that are in close proximity to the patient (e.g., bed rails, over bed tables) and frequently-touched surfaces in the patient care environment (e.g., door knobs, surfaces in and surrounding toilets in patients' rooms) on a more frequent schedule compared to that for other surfaces (e.g., horizontal surfaces in waiting rooms). Commonly used hospital level disinfectants (such as sodium hypochlorite) should be used for cleaning

- As a bare minimum requirement, Cleaning is recommended at least once a day and more frequently if visibly soiled using standard hospital registered disinfectants, such as sodium hypochlorite 1: 1,000 ppm.

- If visible contamination or spills, it is recommended to use a higher dilution of EPA registered disinfection such as sodium hypochlorite at 1: 10,000ppm

- 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.

- Proper cleaning and disinfection of reusable respiratory equipment is essential in ARI patient care.

- Follow the manufacturer's recommendations for use or dilution, contact time and handling of disinfectants.

8. Terminal cleaning of an isolation room

In addition to routine cleaning, additional cleaning practices and/or the use of personal protective equipment for cleaning may be required in health care settings under special circumstances. A terminal cleaning is defined as "a procedure required to ensure that an area has been cleaned/decontaminated following discharge/transfer of a patient with an infection (i.e. MDROs or communicable disease) in order to ensure a safe environment for the next patient.

- Before entering the room, cleaning equipment should be assembled before applying PPE.
- PPE must be removed, placed in an appropriate receptacle and hands cleaned before moving to another room or task.
- PPE must not be worn or taken outside the patient room or bed space.
- Protocols for cleaning must include cleaning of portable carts or built-in holders for equipment.
- The room should be decontaminated from the highest to the lowest point and from the least contaminated to the most contaminated.
- Remove curtains and placed in red linen bag with alginate plastic after patient is discharged
- Use disinfectants such as sodium hypochlorite. The surface being decontaminated must be free from organic soil. A neutral detergent solution should be used to clean the environment prior to disinfection or a combined detergent /disinfectant may be used.

- In addition to the above measures, the following additional measures must be taken when performing terminal cleaning for Airborne Infection Isolation Rooms (AIIR)

    - After patient/resident transfer or discharge, the door must be kept closed and the Airborne Precautions sign must remain on the door until sufficient time has elapsed to allow removal of airborne microorganisms. Duration depends on ACH. With ACH of 12 or 15, the recommended duration is 23 to 35 minutes and 18 to 28 minutes with 99%-99.9% efficiency respectively.
    - It is preferable to wait for sufficient air changes to clear the air before cleaning the room;
    - If the room is urgently needed before the air has been sufficiently cleared ,an N95 respirator must be worn during cleaning
    - Remove N95 respirator only after leaving room and door has been closed.

9. Dishes and eating utensils

- Use disposable utensils as much as possible
- Wash reusable dishes and utensils in a dishwasher with recommended water temperature. During the SARS epidemic Dishes and eating utensils were not implicated as a source of transmission

10. Linen management

- Contaminated linen should be handled as little as possible to prevent gross microbial contamination of the air. Washing / Disinfecting linen should be handled according to hospital protocol

HEALTHCARE WORKER (HCW)

- Healthcare worker with high risk condition / immune-compromised should not be allowed managing and providing routine care for PUI cases with Acute Respiratory Infections (ARI)

- Vaccinate health-care workers caring for patients who are at higher risk of severe or complicated influenza disease, to reduce illness and mortality among these patients

- Healthcare worker who are managing and providing routine care for PUI cases with Acute Respiratory Infections need to be trained on proper use of PPE.

- Keep a register of health-care workers who have provided care for patients with ARIs of potential concern, for contact tracing

- In a Confirmed case, the health care worker should not “float” or be assigned to other patient-care areas if possible. The creation of a dedicated team consisting of nurses, medical officers and specialist and other supportive staff from other areas are recommended.

- The HCWs who are managing and providing routine care for PUI cases with Acute Respiratory Infections. should be monitored for symptoms daily. If HCWs become symptomatic he / she need to be isolated and managed accordingly.

Visitors

- Limit visits to patients with known or possible Wuhan Pneumonia to persons who are necessary for the patient’s emotional well-being and care.
- Visitors who have been in contact with the patient before and during hospitalization are a possible source/ contact of the infection. Therefore, schedule , documentation and controlled visits are strongly recommended to allow for appropriate screening for acute respiratory illness before entering the hospital and appropriate instruction on use of PPE and other precautions (e.g., hand hygiene, limiting surfaces touched) while in the patient’s room.

References

1. Policies and Procedures on Infection Prevention and Control – Ministry of Health Malaysia; 2018
2. Infection prevention and control of epidemic- and pandemic-prone acute respiratory infections in health care. World Health Organization 2014
3. Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) Version 2. CDC 2004
4. Disinfection Guidelines 2018 - Ministry of Health Malaysia, Malaysia
5. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected, Interim Guidance. WHO Jan 2020