GUIDELINES ON
INFECTION PREVENTION AND CONTROL (IPC) MEASURES
IN MANAGING SUSPECTED, PROBABLE OR
CONFIRMED CORONAVIRUS DISEASE (COVID-19)

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ANNEX 8

INFECTION PREVENTION AND CONTROL (IPC) MEASURES IN MANAGING SUSPECTED, PROBABLE OR CONFIRMED CORONAVIRUS DISEASE (COVID-19)

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Note:

This guideline is based on current information available regarding disease severity, transmission efficacy and shedding duration. This document will be updated as more information is made available.
ACKNOWLEDGEMENT

ADVISORS

Datuk Dr Muhammad Radzi Abu Hassan
Director General of Health
Ministry of Health

Dato’ Dr. Asmayani Khalib
Deputy Director General of Health
(Medical)
Ministry of Health

Dr Mohd Azman Yacob
Director
Medical Development Division
Ministry of Health

Dato’ Dr. Suresh Kumar Chidambaram
Senior Consultant Infectious Disease Physician &
Head of Infectious Disease Service
Ministry of Health

Datuk Dr. Norhayati Rusli
Deputy Director General of Health
(Public Health)
Ministry of Health

Dr Anita Suleiman
Director
Disease Control Division
Ministry of Health

Dr Mohd Safiee Ismail
Director
Family Health Development Division
Ministry of Health

Dr Azlihanis Abdul Hadi
Public Health Physician
Medical Care Quality Section
Medical Development Division
Ministry of Health

CONTRIBUTORS

Dato’ Dr. Ker Hong Bee

Dato’ Dr. Chow Ting Soo

Prof. Dr. Sasheela Sri La Ponnampalavanar

Dr. Yasmin Mohamed Gani

Dr. Suraya Amir Husin

Dr. Feroza Sulaiman

Dr. Shanti Rudra Deva

Dr. Suraya Hanim Abdullah Hashim

Dr. Nor Farah Bakhtiar

Dr. Sara Sofia Yahya

Dr. Priya Ragunath

Dr. Noraini Mohd Yusof

Dr. Nik Khairil Reza Md Yazin

Dr. Nik Mazlina Mohamad

Dr. Siti Rohani Abdul Hadi

Dr. Husni Hussain

Dr. Hazaimah Shafii

Dr. Pravin Muniandy

En. Mohd Shazmizal Mohd Mokhtar

Pn. Suhailey Othman

Pn. Azieta Yusof

En. Sahaludin Sharif

Pn. Norhanida Shariffudin

Pn. Che Liza Che Abdullah

Pn. Norjulydah Hamdan

Pn. Norida Sidek

Pn. Rosmah Puasa

En. Mohd Romza Hassan
INTRODUCTION

Infection prevention and control (IPC) is one of the eight pillars of the public health response in any health emergency disaster such as COVID-19 pandemic. It also serves as a basic requirement for outbreak preparedness and a critical element of readiness.

The aims of IPC in an outbreak are:

- To reduce transmission of healthcare-associated infection (HCAI)
- To enhance the safety of healthcare workers (HCWs), patients, carers and visitors
- To enhance the ability of health facilities to respond to an outbreak
- To lower or reduce the risk of the hospital itself amplifying the outbreak

INFECTION PREVENTION AND CONTROL (IPC) GUIDING PRINCIPLES

The principles of IPC to prevent or limit transmission in healthcare facilities include:

1. Availability of an IPC program with a dedicated and trained IPC team.

2. Ensuring triage, early and rapid recognition AND source control that includes promotion of respiratory hygiene.

3. Application of routine IPC precautions (Standard Precautions) for all patients.

4. Implementing additional precautions (Transmission Based Precautions) in selected patients (i.e., contact, droplet, and airborne) based on the presumptive diagnosis.

5. Implementing administrative control which includes provision of adequate and regular supply of personal protective equipment (PPE) and appropriate training of HCWs.

6. Using environmental and engineering control to support IPC activities.

7. Establishment of surveillance program on healthcare-associated infection (HCAI).

8. Vaccination of healthcare workers (HCWs).
1. **INFECTION PREVENTION AND CONTROL (IPC) PROGRAM WITH DEDICATED AND TRAINED IPC TEAM**

1.1. IPC activity should be an ongoing activity supported by the national program and by the IPC focal point/team/committee, the health facility administrator and all staff at the facility level.

1.2. The IPC team should be trained and updated regularly on the latest evidence on SARS-CoV-2.

2. **TRIAGE, EARLY AND RAPID RECOGNITION AND SOURCE CONTROL**

2.1. Rapid case identification of patients should be done at entry points of the healthcare facility.

2.2. A well-established and well-equipped triage station should be available at the POINT OF ENTRY to hospital emergency departments, health clinics/private GP clinics/fever centers.

2.3. Post visual alerts (in appropriate languages) at the entrance to outpatient facilities (e.g., emergency departments (EDs), physicians' offices and outpatient clinics) instructing patient and the persons who accompany them to inform healthcare personnel of symptoms of a respiratory infection or symptoms related to COVID-19 when they first register for care, and practice respiratory hygiene/cough etiquette.

2.4. Use physical barriers to reduce exposure to the SARS CoV-2 virus, such as blind/glass/plastic windows.

2.5. Screening of patients:

2.5.1. Screening questions should include epidemiological link (i.e., close contact/history) and clinical presentation.

2.5.2. Train HCWs on the signs and symptoms of COVID-19 based on the latest case definitions.

2.6. Provide resources for performing hand hygiene (alcohol-based hand rub made available) at all entrances (e.g., screening areas), counters, waiting areas and common areas (e.g., pantry and meeting room) as well as disinfectant wipes for regular cleaning of high touch areas.

2.7. Provide tissues with a no-touch bin for disposal of tissues/biohazard bag.

2.8. HCWs should always maintain physical distancing of more than 1 meter from patients, visitors and other HCWs.
2.9. HCWs should wear well fitted surgical mask and other PPE based on the risk assessment.

2.10. The use of mask by visitors, patients, and accompanying person must follow the current policy by the Ministry of Health Malaysia (MOH).

2.11. If patients have Acute Respiratory Infection (ARI) or fulfil the criteria of suspected COVID-19 based on the screening questionnaire, they should be sent to the dedicated waiting area which is well ventilated with spatial separation of at least 1–2 meters between patients in the waiting rooms.

2.12. Surgical masks (not N95 mask) must be offered if they are able to tolerate (not tachypneic and/or not hypoxic). If intolerable, advise the patient to cover their nose and mouth during coughing or sneezing with either tissue or flexed elbow. Transfer these patients to dedicated areas that are separated from other patients such as an isolation or a negative pressure room/tent or areas with natural ventilation as soon as possible.

2.13. Clean high touch areas (i.e., chair, table, and couch) at waiting and triage areas after the patient leaves the area or as required (i.e., spillage or soiling).

2.14. Examination/isolation room

2.14.1. Examination/isolation room at entry points (i.e., ED/primary care etc.) should be (in descending order of preference):

   i. Single room (nursed with the door closed) and attached bathroom
   ii. Single room

2.15. Ensure the rooms are adequately ventilated by natural ventilation (opening windows) or mechanical ventilation. If by mechanical ventilation, ensure airflow and ventilation rate are appropriate, and there is sufficient air exchange between indoors and outdoors. Healthcare facilities are advised to discuss optimizing ventilation with their respective engineering teams.

2.16. Inpatient screening

3. STANDARD PRECAUTIONS

Standards Precautions are routine IPC precautions that should apply to ALL patients in ALL healthcare settings.

In addition, risk assessment is crucial for all activities as it helps to assess activity and the PPE needed for adequate protection for each activity.

The precautions are described in detail within Chapter 3 of the "Policies and Procedures on Infection Prevention and Control, Ministry of Health Malaysia, 3rd edition (2019)" as follows:

3.1. HAND HYGIENE

Hand hygiene is a simple and effective way to prevent the spread of infectious pathogen including SARS-CoV-2 in healthcare settings.

Hand hygiene should be done according to the WHO Five moments of hand hygiene:

i. Before touching a patient;
ii. Before any clean or aseptic procedure;
iii. After body fluid exposure risk;
iv. After touching a patient; and
v. After touching a patient’s surroundings, including contaminated items or surfaces.

3.1.1. Use appropriate product and technique as below:

- Alcohol based hand rub (if hands are not visibly soiled) for 20-30 seconds
- Soap and water (when hands are visibly dirty or contaminated) for 40-60 seconds

3.1.2. Display visual aids such as posters or infographics on hand hygiene within the health facility.

3.1.3. HCWs should ensure they are bare below the elbows during patient care to avoid contamination of clothes.
3.2. PERSONAL PROTECTIVE EQUIPMENT (PPE)

3.2.1. PPE should be used according to the setting, target personnel, risk of exposure (e.g., type of activity) and the mode of transmission of the pathogen (e.g., contact, droplet, or aerosol).

3.2.2. The effectiveness of PPE depends on the following factors:
   - HCW training on donning and doffing of PPE
   - Prompt access to sufficient supplies
   - Provision of adequate PPE according to technical specifications
   - Appropriate hand hygiene
   - HCW compliance
   - Supervision and regular monitoring and feedback by IPC team

3.2.3. Respiratory fluids continue to be the primary mode of transmission for COVID-19 via large respiratory droplets and small aerosol particles. Transmission occurs predominantly when an infectious person transmits infected droplets into the eyes, nose, or mouth of another person through activities that creates droplets/aerosols (talking/coughing/sneezing etc.) and/or when a person touches recently contaminated surface/object and then rubs their eyes, nose, mouth or eats without cleaning hands beforehand.

3.2.4. Factors affecting the risk of acquisition of healthcare-associated SARS-CoV-2 infection include:
   - Poor ventilation within the facility
   - HCW proximity to the patient
   - Longer durations of exposure to the patient
   - Inappropriate use of PPE, including masks and eye protection
   - Patient behaviors (e.g., coughing, yelling or ability to wear a mask)
   - Day of illness

3.2.5. Transmission of infection through fomite contamination of the environment can happen, however the risk is low.

3.2.6. The risk of fomite-associated transmission is dependent on the following factors:
   - The infection prevalence rate in the community
   - The amount of virus infected people expels (which can be substantially reduced by wearing a well fitted mask)
   - The deposition of expelled virus particles onto surfaces (fomites), which is greater in areas of poor ventilation and poor airflow
• Interaction with environmental factors (e.g., heat and evaporation) causing damage to virus particles while airborne and on fomites.
• The time between when a surface becomes contaminated and when a person touches the surface.

The risk is severely reduced by frequent hand hygiene, effective cleaning, and disinfection of high touch areas, wearing appropriate PPE, increasing ventilation, and wearing masks. The use of head cover and boot covers are not recommended and does not confer any additional protection.

3.2.7. The use of surgical masks by HCWs should follow current MOH policy.

3.2.8. Appropriate mask fitting should always be ensured [for particulate respirators e.g., N95, through initial fit testing and user seal-check (fit check), and for medical masks: through methods to reduce air leakage around the mask] as well as compliance with appropriate use of PPE and other precautions.

Fit test is conducted to determine if there is a gap in the seal of the respirator used. It should be conducted at least once a year or whenever there is a change in body habitus.

Seal-check is conducted by the user to determine if the respirator is properly sealed to the face.

3.2.9. Double masking in the clinical area is not recommended, given the lack of evidence regarding its risks and benefits and the potential of self-contamination and reduced breathability. This is based on the WHO Interim Guidance: Infection Prevention and Control during Health care when Coronavirus disease (COVID-19) is Suspected or Confirmed, 12 July 2021.

3.2.10. The use of bands or ties behind the head (rather than ear loops) to improve the mask fit by reducing the gaps at the sides may also be considered.

3.2.11. The use of eye protection (face shield/goggles) with surgical mask in clinical setting is based on risk assessment.

3.2.12. Eye protection should also be worn when exposed to risk of airborne transmission and where there is a risk of contamination to the eyes from splashing of blood, body fluids, excretions, or secretions (including respiratory secretions). In activities that have high risk of aerosolization and contamination such as performing an aerosol-generating procedure (AGP), it is recommended to wear a face shield rather than goggles.
3.2.13. The following practices are NOT RECOMMENDED:
- Reuse of PPE (donning of a used PPE item without decontamination/reprocessing)
- Disinfection of gloved hands
- Use of gloves in settings where they are not needed (e.g., administration of COVID-19 vaccine)
- Use of surgical mask in combination with respirator to extend the use of respirator

3.3. DISINFECTION AND STERILIZATION

3.3.1. All single-use medical equipment should not be re-used.

3.3.2. All reusable medical equipment (e.g., blood glucose meter and other point of care devices, surgical instruments and endoscope) are cleaned and reprocessed appropriately prior to use on another patient.

3.3.3. Reusable medical equipment must be cleaned and reprocessed according to general protocols for disinfection and sterilization.

3.3.4. If not visibly soiled, wipe external surfaces of large portable equipment (e.g., X-ray machines and ultrasound machines) that have been used in the isolation room or area with an approved hospital disinfectant upon removal from the patient’s room or area.

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

3.3.6. Follow the manufacturer’s recommendations for use of dilution, contact time and handling of disinfectants.

3.4. ENVIRONMENTAL HYGIENE (CLEANING AND DISINFECTION)

3.4.1. Ensure environmental cleaning and disinfection procedures are followed consistently and correctly as per healthcare facilities recommendation.

3.4.2. 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 and over bed tables) and frequently touched surfaces in the patient care environment (e.g., doorknobs and surfaces in and surrounding toilets in patients' rooms).

3.4.3. Recommended frequency of cleaning and disinfection of environmental surfaces in healthcare facility setting are listed in Table 1.
**ANNEX 8**

**TABLE 1: RECOMMENDED FREQUENCY OF CLEANING OF ENVIRONMENTAL SURFACES, ACCORDING TO THE PATIENT AREAS WITH SUSPECTED, PROBABLE OR CONFIRMED COVID-19 IN HEALTHCARE SETTING**

<table>
<thead>
<tr>
<th>Patient area</th>
<th>Frequency</th>
<th>Additional guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening/triage area</td>
<td>At least twice daily</td>
<td>Focus on high-touch surfaces, then floors (last)</td>
</tr>
<tr>
<td>Inpatient rooms/cohort – occupied</td>
<td>At least twice daily, preferably three times daily, particularly for high-touch surfaces</td>
<td>Focus on high-touch surfaces, starting with shared/common surfaces, then move to each patient bed; use new cloth for each bed if possible; then floors (last)</td>
</tr>
<tr>
<td>Inpatient rooms – unoccupied (terminal cleaning)</td>
<td>Upon discharge/transfer</td>
<td>Low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, bed thoroughly cleaned and disinfected</td>
</tr>
<tr>
<td>Outpatient/ambulatory care rooms</td>
<td>After each patient visit (particularly for high-touch surfaces) and at least once daily terminal clean</td>
<td>High-touch surfaces to be disinfected after each patient visit. Once daily for low-touch surfaces, high-touch surfaces, floors (in that order); waste and linens removed, examination bed thoroughly cleaned and disinfected</td>
</tr>
<tr>
<td>Hallways/corridors</td>
<td>At least twice daily (^b)</td>
<td>High-touch surfaces including railings and equipment in hallways, then floors (last)</td>
</tr>
</tbody>
</table>
| Patient bathrooms/toilets                | Private patient room toilet: at least twice daily  
Shared toilets: at least three times daily | High-touch surfaces, including door handles, light switches, counters, faucets, then sink bowls, then toilets and finally floor (in that order)  
Avoid sharing toilets between staff and patients |

\(^a\) Environmental surface should also be cleaned and disinfected whenever visibly soiled or if contaminated by a body fluid (e.g., blood);  
\(^b\) Frequency can be once a day if hallways are not frequently used.

Source: Cleaning and disinfection of environmental surfaces in the context of COVID-19 Interim guidance, World Health Organization, 15 May 2020
3.4.4. Cleaning should be done from the least soiled (cleanest) to the most soiled (dirtiest) areas, and from the higher to lower levels and using standard hospital registered disinfectants, such as sodium hypochlorite 1000 ppm.

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

3.4.6. For ISOLATION ROOM, terminal cleaning and disinfection should be done following the discharge/transfer of a patient. The steps for terminal cleaning areas are as follows:

- 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 place in red linen bag with alginate plastic.
- 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.

3.4.7. In addition, the following additional measures must be taken when performing terminal cleaning for Airborne Infection Isolation Rooms (AIIR):

- The cleaner should wait for sufficient air changes to clear the air before cleaning the room.
- 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 Air Changes Per Hour (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.
- When the ACH cannot be determined, it is recommended that the room is left for a time interval of 45 minutes before the cleaning and disinfection is commenced.
3.5. WASTE MANAGEMENT

3.5.1. General waste should be segregated from infectious waste.

3.5.2. Infectious waste should be handled and treated in accordance with healthcare facility policies and local regulations.

3.5.3. HCWs who are involved in waste management should be trained and wear appropriate PPE.

3.6. LINEN MANAGEMENT

3.6.1. Contaminated linen should be handled with minimal manipulation to prevent contamination of the air, surfaces, and persons. DO NOT:
   - Carry contaminated linen against body.
   - Shake the linen.
   - Place used linen on the floor or other surfaces.
   - Overfill the laundry basket.

3.6.2. The steps for handling linen:
   - Place the linen directly into red alginate plastic and secure. If there is any solid excrement on the linen, such as feces or vomit, it should be segregated and removed first.
   - Place red alginate plastic into the red linen bag

3.6.3. All linen should be handled inside the isolation room/cohort area/ward.

3.6.4. Store all used linen in a designated area (e.g., closet or room).

3.6.5. HCWs handling soiled bedding, towels and clothes from patient should wear appropriate PPE, which includes surgical mask, gloves, eye protection (face shield/goggles), long-sleeved plastic apron, boots, or closed shoes before touching any soiled linen.

3.6.6. Washing/disinfecting linen should be handled according to healthcare facilities protocol.
3.7. SAFE INJECTION PRACTICES, SHARPS MANAGEMENT AND PREVENTION OF NEEDLE STICK INJURIES

The seven steps to safe injections are:

i. Clean workplace
ii. Hand hygiene
iii. Sterile safety-engineered syringe
iv. Sterile vial of medication and diluent
v. Skin cleaning and antisepsis
vi. Appropriate collection of sharps
vii. Appropriate waste management

3.8. RESPIRATORY HYGIENE/COUGH ETIQUETTE

3.8.1. Should be applied by all individuals with respiratory symptoms.

3.8.2. All individuals (HCWs, patients and visitors) with signs and symptoms of a respiratory infection should:

- Use surgical mask (refer to Appendix 1 – How to wear a medical mask safely by World Health Organization).
- Cover their mouth and nose when coughing/sneezing.
- Use tissues, handkerchiefs, cloth/fabric, or surgical masks and dispose them into waste containers.
- Encourage to perform handwashing.
- Kept at least 1 meter from other patients.

3.8.3. Visual alert/aids should be placed to remind patients and visitors to practice respiratory hygiene/cough etiquette.

3.8.4. Surgical masks, tissues and hand washing facilities should be made available in all areas.
4. ADDITIONAL TRANSMISSION-BASED PRECAUTIONS

4.1. CONTACT AND DROPLET PRECAUTIONS

4.1.1. Patient Placement on Admission

4.1.1.1. Patient shall be placed in adequately ventilated single room with attached bathroom. If unavailable, may consider (in descending order of preference):

- Adequately ventilated single room without attached bathroom.
- When a single room is unavailable, cohorting confirmed COVID-19 patients is allowed with patients placed at least 1 meter apart. Suspected and probable patients awaiting results should be placed in an isolation room.

4.1.2. Personal Protective Equipment (PPE)

4.1.2.1. Recommended PPE to be used in the management of probable/suspected and confirmed COVID-19 should be used according to type of activity and risk of contact with patient. Refer to Table 2 and infographics below.

**TABLE 2: RISK STRATIFYING CONTACT**

<table>
<thead>
<tr>
<th>Type of activities</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity A NO contact with patient</td>
<td>• Taking a history</td>
</tr>
<tr>
<td>Activity B MINIMAL contact with patient</td>
<td>• Recording clinical vital assessment (Blood pressure/Pulse rate/Oxygen saturation) • Inserting a peripheral IV cannula • Administering or changing IV fluids • Doing simple clinical examination such as auscultation/feeling the pulse/checking DXT etc.</td>
</tr>
<tr>
<td>Activity C DIRECT contact with patient OR Aerosol Generating Procedure (AGP)</td>
<td>• Changing diapers and assisting with toileting activities • Wound care • Assisting or performing oral care/bathing/ sponging • Transferring a patient e.g., from bed to chair • Resuscitation • Performing aerosol-generating procedure (AGP)</td>
</tr>
</tbody>
</table>
MANAGEMENT OF SUSPECTED/ PROBABLE/ CONFIRMED COVID-19 CASE

**ACTIVITY**
No contact with patient e.g. taking history

**TYPE OF PPE**
1) N95 mask  
2) Eye protection (face shield/ goggles)  
3) Disposable plastic apron

*If no patient contact is anticipated, plastic apron can be omitted

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MANAGEMENT OF SUSPECTED/ PROBABLE/ CONFIRMED COVID-19 CASE

**MINIMAL** contact with patient/contact is limited AND no splashes are anticipated e.g. taking vital signs, inserting a peripheral IV cannula, administering or changing IV fluids, doing simple clinical examination

**ACTIVITY**

**TYPE OF PPE**
1) N95 mask  
2) Eye protection (face shield/ goggles)  
3) Disposable plastic apron  
4) Disposable gloves
4.1.3. Patient care equipment

4.1.3.1. Dedicate the use of non-critical patient-care equipment to avoid sharing between patients (e.g., stethoscope, sphygmomanometer, thermometer, or bedside commode). If unavoidable, then adequately clean and disinfect them between use for each individual patient with hospital recommended disinfectant.

4.1.4. Patient Transfer and Transport within the Healthcare Facilities

4.1.4.1. Avoid the movement of patients unless medically necessary.

4.1.4.2. 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.

4.1.4.3. Clean and disinfect patient-contact surfaces (e.g., bed, wheelchair, and incubators) after use.

4.1.4.4. HCWs transporting patients must wear appropriate PPE.
4.1.4.5. When outside of the isolation room, the patient should wear a surgical mask (not N95 mask) if not in respiratory distress. Oxygen supplement using nasal prong can be safely used under a surgical mask. If a patient is unable to tolerate a surgical mask, advise the patient to cover their nose and mouth during coughing or sneezing with tissue or flexed elbow during transport.

4.1.5. Specimen Collection and Transport

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

4.1.5.2. Deliver all specimens by hand whenever possible. Do not use pneumatic-tube systems to transport specimens.

4.1.5.3. State the name of the Suspected/Probable/Confirmed COVID-19 case clearly on the accompanying request form. Notify the laboratory as soon as possible that the specimen is being transported.

4.1.5.4. Ensure that HCWs who collect respiratory specimens from Suspected/Probable/Confirmed COVID-19 patients wear appropriate PPE.

4.1.5.5. Place specimens for transport in leak-proof specimen bags (please refer to Annex 5 Guidelines on Laboratory Testing for COVID-19).

4.1.5.6. Ensure that HCWs who transport specimens are trained in safe handling practices and spill decontamination procedures. There are nospecial requirements for transport of samples to the laboratory and they can be transported as routine samples for testing. Hand hygiene is paramount after specimen has been sent.

4.1.6. Dishes and Eating Utensils

4.1.6.1. Use disposable utensils if available.

4.1.6.2. Wash reusable items in a dishwasher.

4.1.6.3. If a dishwasher is not available, wash items thoroughly with either soap or detergent and water as per healthcare facilities guidelines.

4.1.6.4. Healthcare facilities may consider using the same utensil for specific patients during their hospital stay.
4.1.7.  Patient Record/Bed Head Ticket

4.1.7.1. Bed head ticket (BHT) of Suspected/Probable/Confirmed COVID-19 patients should be tagged.

4.1.7.2. The patient’s record/BHT preferably be kept outside the patient’s room to minimize the risk of transmission of COVID-19/Multidrug-Resistant Organism (MDRO) infection.

4.1.7.3. Hand hygiene should be performed each time after handling the patient record/BHT.

4.1.8.  Healthcare Worker (HCW)

4.1.8.1. Ensure all HCWs who are managing these patients are up to date with their vaccination schedule e.g., COVID-19 vaccine and influenza vaccine.

4.1.8.2. It is advisable for all pregnant HCWs to practice strict IPC measures when dealing with COVID-19 patients.

4.1.8.3. HCWs who are managing and providing routine care for Suspected/Probable/Confirmed COVID-19 patients need to be trained on the proper use of PPE.

4.1.8.4. Keep a register of HCWs who have provided care for patients with Suspected/Probable/Confirmed COVID-19 for contact tracing.

4.1.8.5. The HCWs/support staff who are managing and providing routine care for Suspected/Probable/Confirmed COVID-19 patients should be monitored for symptoms minimum daily. If HCWs become symptomatic, they must to report to the team’s supervisor and managed accordingly.

4.1.9.  Visitor or Caregiver

4.1.9.1. Refer to the latest Visiting Policies for Caregiver and Visitor at MOH Hospitals in the Context of COVID-19.

4.1.9.2. Visitors and caregivers are discouraged. Discuss with the managing team if a visitor or caregiver is absolutely necessary. Approval is based on the discretion of the attending team and hospital policy.
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4.1.9.3. Exceptions for a visitor or caregiver may be considered on a case-by-case basis for those who are essential for the patient’s wellbeing, e.g.:

- Patients with critical illness, palliative care, hospice care and at end of life.
- Patients who need assisted care, e.g., to help patient to mobilize, personal care especially for patients with disabilities, critically ill, elderly, or postoperative patients.
- Patients who need assistance for communication, such as those with hearing, visual, speech, cognitive, intellectual or memory impairments.
- Patients who require emotional and support in decision making.
- Pediatric patients
- Mothers in labour

4.1.9.4. Alternate methods of communication should be encouraged such as video calls to reduce the risk of transmission.

4.1.9.5. Thorough advice and counselling should be given, and written consent should be taken prior to visitation based on hospital policy.

4.1.9.6. Visitors or caregivers should be screened for signs and symptoms of COVID-19. Symptomatic caregiver should be screened for COVID-19.

4.1.9.7. Document and limit the number of visitors at scheduled times. Advise family members to assign a single visitor or caregiver who is not at high risk for severe COVID-19 to visit or taking care the patient.

4.1.9.8. Visitors or caregivers should be advised to limit their movement in the healthcare facility.

4.1.9.9. HCWs should educate and supervise the visitor or caregiver on hand hygiene (before entering and leaving the room), respiratory etiquette, physical distancing (maintain at least 1 meter), use of PPE and other IPC measures as well as on how to recognize the signs and symptoms of COVID-19.

4.1.9.10. HCWs must instruct and supervise all visitors or caregivers on the donning and doffing of PPE (surgical mask or N95 mask, face shield, gloves, plastic apron) before entering the room.

4.1.9.11. PPE recommendation for the long-term carer may be limited to surgical mask. The use of plastic aprons and gloves are recommended when anticipating exposure to bodily fluids.
4.1.9.12. Visitor or caregiver who has been in contact with the patient before and during hospitalization (i.e., parents taking care of their children) are a possible source/contact of the infection.

4.1.9.13. Exposed visitors or caregiver should report any signs and symptoms to their healthcare providers.

4.1.9.14. No visitor or caregiver should be allowed during an AGP procedure.

4.2. AIRBORNE PRECAUTIONS FOR AEROSOL-GENERATING PROCEDURES (AGP)

4.2.1. An aerosol-generating procedure (AGP) is defined as any medical procedure that can induce the production of aerosols of various sizes, including small (< 5μm) particles. The aerosol-generating procedures include:

- Intubation, extubation and related procedures
- Tracheotomy/tracheostomy procedures
- Manual ventilation
- Suctioning
- Bronchoscopy
- Nebulization
- Non-invasive ventilation (NIV) e.g., Bi-level Positive Airway Pressure (BiPAP) and Continuous Positive Airway Pressure ventilation (CPAP)
- Surgery and post-mortem procedures in which high-speed devices are used
- High-frequency oscillating ventilation (HFOV)
- High-flow Nasal Oxygen (HFNO)
- Induction of sputum (using nebulized hypertonic saline)
- Dental procedures
- Autopsy procedures

4.2.2. Patient placement during AGP should be (in descending order of preference):

i. Negative pressure rooms/AlIR room.

ii. Adequately ventilated single room with at least natural ventilation of atleast 160 L/s/patient air flow, with closed doors (use with High-Efficiency Particulate Air (HEPA) filter if possible).
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5. ADMINISTRATIVE CONTROLS

5.1. Implementing administrative control and policies to prevent and control the transmission of SARS-CoV-2 within the healthcare facility as well as to ensure the safety of HCWs, patients and visitors.

5.2. The examples of administrative control implemented by the healthcare facility include:

- Develop policies/guidelines such as Management of suspected/confirmed COVID-19, Management of HCW exposed to COVID-19, etc.
- Ensure IPC guidelines are in place, updated and disseminated to all HCWs.
- Regular education and training on IPC to all categories of HCWs including patient and visitors.
- Monitor the HCWs compliance to standard precautions and SOPs irrespective of vaccination status.
- Establish infrastructure which support the IPC activities and planning for repurposing of wards for isolating COVID-19 patients.
- Adequate patient to staff ratio to reduce burden and stress to staff.
- Provision of adequate and regular supply of PPE.

6. ENVIRONMENTAL AND ENGINEERING CONTROLS

6.1. Engineering control is one the crucial principles in hierarchy of controls within the healthcare facility to prevent the transmission of infectious disease including COVID-19.

6.2. Refer to Table 3, 4 and 5 for the summary of recommendations to improve ventilation in healthcare settings.
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**TABLE 3: SUMMARY OF RECOMMENDATIONS TO IMPROVE NATURAL VENTILATION IN HEALTHCARE SETTINGS**

| Ventilation rate/ number of air changes | 60 L/s/patient (hourly average ventilation rate) or 6 ACH (Air Changes Per Hour)  
160 L/s/patient or 12 ACH where AGPs are performed. |
| --- | --- |
| The airflow direction | Direction should be from clean to less clean.  
Modify the functional distribution regarding airflow directions to minimize exposure of HCWs.  
Avoid using devices that generate a strong air flow in a common area, especially streams of air going from person to person. |
| Air exhausted outside | Air should be exhausted directly to the outside away from air intake vents. |
| Toilets | Avoid opening windows in toilets to maintain the correct direction of ventilation.  
Keep toilet ventilation in operation round the clock.  
Flush toilets with closed lid. |
| Monitoring indoor air quality | CO₂ level more than 1000 ppm indicates poor indoor air quality.  
To minimize risk of transmission, it is important to keep the CO₂ levels to as low as practically possible (preferable below 800 ppm as recommended by US Centers for Disease Control and Prevention (CDC)). |
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#### TABLE 4: SUMMARY OF RECOMMENDATIONS TO IMPROVE MECHANICAL VENTILATION IN HEALTHCARE SETTINGS

| Ventilation rate/number of air changes | 60 L/s/patient (hourly average ventilation rate) or 6 ACH (Air Changes Per Hour)  
160 L/s/patient or 12 ACH where AGPs are performed. |
|----------------------------------------|--------------------------------------------------------------------------------------------------|
| The airflow direction                  | Direction should be from clean to less clean.  
Modify the functional distribution regarding airflow directions to minimize exposure of health care workers,  
Avoid using devices that generate a strong air flow in a common area, especially streams of air going from person to person. |
| Air exhausted outside                  | Air should be exhausted directly to the outside away from air intake vents. |
| Air recirculation                      | Consult Air Conditioning and Mechanical Ventilation (ACMV) professional.  
Recirculation systems where no or too little fresh air is added are not recommended.  
Maximize outside air intake and reduce air recirculation as much as possible.  
Increase outdoor fresh air supply, potentially up to 100%, if supported by and compatible with the ACMV system.  
Increasing the amount of outdoor air will lead to risk of surface condensation and growth of fungus and bacteria. The humidity level should be carefully controlled not to exceed 60% Relative Humidity (RH) by installing dehumidification component at the Air-handling Unit (AHU).  
Non-ducted (with indoor air recirculation) convectors such as split or fan coil units is discouraged (difficult to maintain, provide poor filtration and contribute to turbulence – potentially increasing the risk of infection).  
MUST be avoided where AGP is performed. |
| Filters                                | In recirculating central ventilation systems, install/upgrade to the most efficient filters (rated at a Minimum Efficiency Reporting Value (MERV)-14 level or higher, or HEPA) taking the capabilities of the ACMV systems into consideration. |
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|-------------------|--------------------------------------------------|
| **Air Relative humidity (RH)** | **AllR: Max 60%**  
**Non-critical area: 40% to 70%** |
| **Regular airing of rooms** | Air common areas such as a conference room, during breaks or after a meeting when everyone has left the room.  
For example, airing is carried out by opening windows and doors wide against each other for 10 to 15 minutes after a meeting.  
To discuss with the hospital engineers if this is allowed and does not cause condensation. |
| **Toilets** | Keeping negative pressure in toilets is recommended, as aerosol formation can occur.  
Avoid opening windows in toilets to maintain the correct direction of ventilation.  
Keep toilet ventilation in operation round the clock. Flush toilets with closed lid. |
| **Monitoring indoor air quality** | CO₂ level more than 1000 ppm indicates poor indoor air quality. To minimize risk of transmission, it is important to keep the CO₂ levels to as low as practically possible (preferable below 800 ppm as recommended by CDC). |
| **Maintenance of air filter** | Make sure air filters are properly sized and within their recommended service life.  
Inspect filter housing and racks to ensure appropriate filter fit and minimize air that flows around, instead of through the filter.  
All maintenance team must wear a full PPE when servicing the AHU (air circulation) or any part of the air ventilation system which cater for COVID-19 patients. |
## TABLE 5: SUMMARY OF VENTILATION SPECIFICATIONS IN SELECTED AREAS OF HEALTHCARE FACILITIES FOR INFECTION PREVENTION AND CONTROL

<table>
<thead>
<tr>
<th>Specifications</th>
<th>All room (includes bronchoscopy suites)</th>
<th>Critical care room*</th>
<th>Isolation anteroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pressure**</td>
<td>Negative</td>
<td>Positive, negative, or neutral</td>
<td>Positive or negative</td>
</tr>
<tr>
<td>Room air changes</td>
<td>≥6 ACH (for existing rooms)</td>
<td>≥12 ACH</td>
<td>≥10 ACH</td>
</tr>
<tr>
<td>Sealed***</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Minimum filtration supply</td>
<td>MERV-14</td>
<td>MERV-14</td>
<td>MERV-14</td>
</tr>
<tr>
<td>Minimum filtration Exhaust</td>
<td>HEPA</td>
<td>HEPA</td>
<td>HEPA</td>
</tr>
<tr>
<td>Recirculation</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

If the procedure is an AGP, it is recommended to perform the procedure in an airborne infection isolation room or a bronchoscopy room with 12 totals ACH. The room must be negative pressured, 100% exhaust and no recirculation within the room.

* Positive pressure and HEPA filters may be preferred in some rooms in intensive care units (ICUs) caring for large numbers of immunocompromised patients.

** Clean-to-dirty: negative pressure - towards an infectious patient, positive - away from immunocompromised patient.

*** Minimized infiltration for ventilation control; pertains to windows, closed doors, and surface joints.

Refer to Ministry of Health Malaysia’s “Policies & Procedures on Infection Prevention and Control, 3rd edition (2019)”

ANNEX 8

APPENDIX 1: WHO INFOGRAPHIC ON HOW TO WEAR A MEDICAL MASK SAFELY

HOW TO WEAR A MEDICAL MASK SAFELY

**Do's**
- Wash your hands before touching the mask
- Inspect the mask for tears or holes
- Find the top side, where the metal piece or stiff edge is
- Ensure the colored-side faces outwards
- Place the metal piece or stiff edge over your nose
- Cover your mouth, nose, and chin
- Adjust the mask to your face without leaving gaps on the sides
- Avoid touching the mask
- Remove the mask from behind the ears or head
- Keep the mask away from you and surfaces while removing it
- Discard the mask immediately after use preferably into a closed bin
- Wash your hands after discarding the mask

**Don'ts**
- Do not use a ripped or damp mask
- Do not wear the mask only over mouth or nose
- Do not wear a loose mask
- Do not touch the front of the mask
- Do not remove the mask to talk to someone or do other things that would require touching the mask
- Do not leave your used mask within the reach of others
- Do not re-use the mask

Remember that masks alone cannot protect you from COVID-19. Maintain at least 1 metre distance from others and wash your hands frequently and thoroughly, even while wearing a mask.

EPI-WIN World Health Organization
REFERENCES


ANNEX 8


