

State of Kuwait

Ministry of Health

Infection Control Directorate

**Interim Guidance on Infection Prevention and Control During Health Care
for Patients with Novel Coronavirus (nCoV) Infection**

21st May 2013

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I. Background

This interim guidance was established to meet the urgent need for up-to-date information and evidence-based recommendations for the safe care of patients with probable or confirmed novel coronavirus (nCoV) infection.

The successful prevention of transmission of nCoV infections associated with health care depends on the full implementation of the core components for infection prevention and control (IPC) programs. Most transmissions occur in the absence of basic IPC precautions and before a specific infection is suspected or confirmed; hence, the routine application of measures to prevent spread of acute respiratory infections (ARI) when caring for symptomatic patients is essential to reduce spread of any ARI in health-care settings. Additional precautions when caring for patients who are Under Investigation (PUI) for nCoV, Severe Acute Respiratory Infection (SARI), Probable or Confirmed nCoV infection should be applied to further reduce the risk of transmission.

Healthcare institutions are advised to ensure a safe environment for patients and healthcare workers (HCWs). It is crucial that HCWs are provided with the best locally available protection for caring for nCoV-infected patients and are followed up if exposure has occurred.

This guidance summarizes:

- Principles of IPC strategies associated with health care
- IPC precautions:
 - a. for providing care for all patients
 - b. for providing care for ARI patients, and
 - c. for providing care for patients who are Under Investigation (PUI) for nCoV, Severe Acute Respiratory Infection (SARI), Probable or Confirmed nCoV infection.

II. Case definition of Novel Coronavirus (nCoV) Infection

Definition of Novel Coronavirus (nCoV) Infection cases is according to Ministry of Health.

III. Triage

- Rapid identification of patients with ARI and patients suspected of nCoV infection with prompt application of appropriate precautions, and implementation of source control is recommended.
- Clinical triage should be used for early identification of all patients with ARIs.
- Identified ARI patients should be placed in an area separate from other patients. Standard and additional IPC precautions described in **sections V and VI** should be promptly implemented.
- Prevention of overcrowding in waiting areas, providing dedicated waiting areas for the ill is recommended.
- Ensure that triage and waiting areas are adequately ventilated.
- Spatial separation of at least 1 m should be maintained between each ARI patient and others, including HCWs (when not using personal protective equipment (PPE)).
- Encourage patients with signs and symptoms of a respiratory infection to use of respiratory hygiene /cough etiquette: They should:
 - cover their mouth and nose when coughing/sneezing
 - use tissues, handkerchiefs, cloth masks or medical masks if available, as source control to contain respiratory secretions, and dispose of them into the waste containers
 - use a medical mask on a coughing/sneezing person when tolerated and appropriate; and
 - perform hand hygiene.

-Standard and additional IPC precautions described in **section VII** when caring for patients under investigation of nCoV infection, severe acute respiratory infection (SARI), probable or confirmed cases should be implemented.

IV. Notification of cases

All treating physicians should notify infection control department and preventive medicine department for all patients under investigation (PUI), Severe Acute Respiratory Infection (SARI), Probable and Confirmed nCoV infection.

V. Standard Precautions

Standard Precautions, a cornerstone for providing safe health care and reducing the risk of further infection, should always be applied in all health-care settings for all patients. Standard Precautions include:

- Hand hygiene
- Use of PPE to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin.
- Prevention of needle-stick or sharps injury
- Safe waste management
- Cleaning, disinfection and, where applicable, sterilization of patient-care equipment.
- Appropriate handling of soiled linen.
- Cleaning and disinfection of the environment.
- Use of respiratory hygiene in anyone with respiratory symptoms should be encouraged.

VI. Additional infection prevention and control precautions when caring for patients with any acute respiratory infection (ARI)

In addition to Standard Precautions, all individuals, including visitors and HCWs, in contact with patients with acute respiratory infection should:

- Wear a medical mask (disposable surgical/procedure mask) when in close contact (i.e. within approximately 1 m) and upon entering the room or cubicle of the patient;
- Perform hand hygiene before and after contact with the patient and his or her surroundings and immediately after removal of a medical mask.

VII. Infection prevention and control precautions when caring for Patient Under Investigation (PUI), Severe Acute Respiratory Infection (SARI), Probable and Confirmed nCoV infection

Standard, contact and airborne precautions should be applied.

VII.1. Hand hygiene

- HCWs should apply “My 5 moments for 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.
- When hands are visibly soiled or contaminated with respiratory secretions, wash hands with antimicrobial soap and water.
- If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands in clinical situations.
- The use of PPE does not eliminate the need for hand hygiene. Hand hygiene may also be necessary while putting on and especially when taking off PPE.

VII.2. Use of personal protective equipment (PPE) upon entering the room of the patient and when handling blood, body substances, excretions and secretions.

- Wear PPE in the following order (Appendix 1):
 - Long-sleeved cuffed gown and plastic apron if splashing of blood, body fluids, excretions and secretions is anticipated.
 - N95 respirator or higher. When putting on a disposable particulate respirator, always check the seal. (**Appendix 2**). To be effective, respirators must provide a proper sealing surface on the wearer’s face. Facial hair impedes good fit, and seal may not be achieved, decreasing the efficiency of the particulate respirator. Personnel with facial hair or other fit limitations should wear loose-fitting hooded or helmeted powered air-purifying respirators (PAPR) equipped with high-efficiency particulate air (HEPA) filters.
 - Protective eyewear (goggles or face shield),
 - Disposable clean gloves
- Persons who should wear PPE include:
 - All health care personnel who provide direct patient care (e.g. doctors, nurses radiographers, physiotherapists)
 - All support staff dealing with the patient and cleaners of patient area.
 - All laboratory workers handling specimens from a patient being investigated for nCoV.

- All sterilization service staff handling equipment that requires decontamination and has come from a patient with nCoV.
- Family members or visitors.

VII.3. Isolation of patients

- a. Patients admitted to the hospital will be directly placed in an airborne infection isolation room and put under contact and airborne precautions. The airborne infection isolation room has:
 - Monitored negative air pressure in relation to the surrounding areas.
 - Minimum 6 to 12 air changes per hour.
 - Exhaust air directly to outside or have re-circulated air to other areas in the hospital filtered by HEPA filter.
- b. If this is not available, a single room should be used. Room doors should be closed. If possible, situate the rooms used for isolation (i.e. single rooms) in an area that is clearly segregated from other patient-care areas.
- c. If on a critical care unit, the patient will be nursed in airborne infection isolation room where available or neutral pressure side room with closed ventilator circuit.
- d. Infection control department should be notified about those patients.

Care of nCoV patients in isolation

Setup of the isolation room

1. Ensure appropriate hand-washing facilities.
2. Infection control instructions/ signage must be placed on the room door.
3. Place a recording sheet at the entrance of the isolation room. All healthcare personnel or visitors entering the isolation room should print their details on the recording sheet so that if follow up/contact tracing is required, details are available.
4. Remove all non-essential furniture. The remaining furniture should be easy to clean and should not conceal or retain dirt or moisture, either within or around it.
5. Stock the sink area with suitable supplies for hand washing, and with alcohol-based hand rub near the point-of-care and room door.
6. Place appropriate waste bags in the room on a foot-operated bin.
7. Place a puncture-proof container for sharps disposal inside the isolation room

8. Keep the patient's personal belongings to a minimum. Keep water pitcher and cup, tissue wipes, and all items necessary for attending to personal hygiene within the patient's reach.
9. The patient should be allocated his/her own non-critical items of patient care equipment, e.g. stethoscope, thermometer and sphygmomanometers. Any item of patient care equipment that is required for other patients should be thoroughly cleaned and disinfected prior to use.
10. Set up a trolley outside the door in the anteroom to hold personal protective equipment. A checklist may be useful to ensure availability of all equipment (**Appendix 3**)
11. Place equipment that requires disinfection and sterilization in an appropriate container with a lid.
12. Keep adequate equipment required for cleaning or disinfection inside the isolation room and ensure meticulous daily cleaning of the isolation room/area.
13. A telephone should be set up in the patient's room.

Anterooms

Isolation rooms may include an anteroom to support the use of PPE. It should include hand wash basin.

Before entering isolation room

1. Only essential staff should enter the isolation room.
2. Staff should collect all needed equipment.
3. Staff and visitors should adhere to proper hand hygiene and wear PPE mentioned above.
4. Wear PPE in the correct order (**Appendix 1**).
5. A record of staff that has contact with the isolated patient should be kept.

On leaving the isolation room

Remove PPE in the correct order. Perform hand hygiene immediately after removing all PPE (**Appendix 1**).

VII.4. Staff

- a. All staff must comply with all infection control precautions.
- b. Staff should refrain from touching their eyes, nose or mouth with potentially contaminated gloved or ungloved hands.
- c. To the extent possible, assign probable or confirmed cases to be cared for exclusively by a group of skilled HCWs both for continuity of care and to reduce opportunities for inadvertent infection control breaches that could result in unprotected exposure.
- d. Staff should be vigilant for any respiratory symptoms in ten days following last exposure to a case.
- e. If staff develop fever and cough after contact with a case, they should report to Preventive Medicine Department who will advise on where they should be assessed and what instructions to follow.

VII.5. Visitors

- a. The number of visitors and family members should be restricted to those essential for patient support and should be trained on the risk of transmission, the infection control precautions and the use of PPE.
- b. Before being allowed into the isolation areas, visitors should consult the nurse in charge.
- c. Visitors entering the isolation room must adhere to the hand hygiene policy and wear PPE.
- d. Visitors leaving the room you must remove PPE and disinfect their hands very well.

VII.6. Patient Transfer

Transfers to other departments

- Avoid the movement and transport of patients out of the isolation room or area unless medically necessary. Where possible, all procedures and investigations should be carried out in the isolation room with a minimal number of staff

present during any procedures. The use of designated portable X-ray equipment and other important diagnostic equipment may make this easier.

- Only if clinical need dictates, and in conjunction with the infection control team, should patients be transferred to other departments; the following procedures then apply:
 - Notify the receiving area of the patient's diagnosis and necessary precautions as soon as possible before the patient's arrival. The department must be informed in advance.
 - Use routes of transport that minimize exposures of staff, other patients and visitors.
 - The patient must be taken straight to and from the investigation/treatment room, and must not wait in a communal area.
 - Ensure that HCWs who are transporting patients wear appropriate PPE and perform hand hygiene afterwards.
 - To allow appropriate decontamination after any procedure, patients should be at the end of a list.
 - The patient should wear a 'surgical ' mask if this can be tolerated - this will prevent large droplets being expelled into the environment by the wearer.
 - The treatment/procedure room, trolley/chair and all equipment should be cleaned and disinfected with a suitable agent after use.
 - Staff carrying out procedures must wear the protective clothing indicated above.
 - It is possible that the virus can survive in the environment for at least 48hrs, so environmental decontamination is vital.

Transfer to other institutions

- If transfer is essential, the Infection Control Team at the receiving hospital and the ambulance staff must be advised in advance of the special circumstances of the transfer.

VII.7. Equipment

- a. Use either disposable equipment or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers) in the isolation room.
- b. Dispose of single use equipment as clinical waste inside room.

- c. Reusable equipment should be avoided if possible. If used, disinfect according to manufacturer's instructions or the hospital disinfection policy. Ventilators should be protected with a high efficient filter and standard decontamination procedures followed.
- d. Closed system suction should be used.
- e. Crockery should be treated as normal (should be cleaned in hot soapy water).
- f. Equipment that re-circulates air (e.g., fans) should not be used as this has the potential to turn a negative pressure room into a positive pressure room.

VII.8. Cleaning and disinfection of the environment

- a. Meticulous daily cleaning of the isolation unit is important in the prevention of cross infection. Cleaning equipment must be cleaned after each use. Mop heads should be sent to the laundry for proper laundering in hot water.
- b. All waste should be discarded into clinical waste bag inside the room. When waste is to be collected for disposal, place in another bag outside the room and then treat as infectious waste.
- c. Curtains should be thoroughly cleaned by laundering in hot water at least weekly.
- d. Cleaners must wear PPE as indicated above, and they must be made aware of the need for additional precautions and be trained in these.
- e. Daily cleaning should be carried out and enhanced cleaning of frequent hand-touch surfaces.
- f. The isolation area should be cleaned after the rest of the ward area.
- g. Dedicated or disposable equipment must be used for cleaning.
- h. Cleaning equipment must be decontaminated following use.
- i. Cleaning environmental surfaces with water and detergent and applying commonly used disinfectants (such as hypochlorite) is an effective and sufficient procedure.

VII.9. Linen

- a. Bag linen inside single room - do not carry through ward/department.
- b. Used linen should be placed in a linen bag inside the room and then into another bag outside the room. Take immediately to laundry collection area – treat as contaminated linen.
- c. The laundry Department should be informed of the high-risk nature.

VII.10. Waste disposal

- a. All waste generated in the isolation room should be disposed of in suitable containers or bags and treated as infectious waste.
- b. Staff responsible for routinely removing waste from isolation room should wear full PPE when removing waste.
- c. One waste disposal bag is usually adequate, providing waste can be placed in the bag without contaminating the outside of the bag. If that is not possible, two bags are needed (double bagging).
- d. Liquid waste such as urine or feces can be safely flushed into the sewer system if there is an adequate sewage system in place.
- e. Waste disposal bags should include appropriate biohazard labeling, and be treated and disposed of as per the policy of the hospital and in accordance with national regulations pertaining to hospital waste.

VII.11. Specimen collection and transportation

- a. All specimens should be regarded as potentially infectious.
- b. HCW who collect or transport clinical specimens should adhere rigorously to Standard Precautions to minimize the possibility of exposure to pathogens.
- c. Ensure that HCWs who collect specimens wear appropriate PPE.
- d. Ensure that personnel who transport specimens are trained in safe handling practices and spill decontamination procedures.
- e. Double bag: Place specimens for transport in leak-proof specimen bags (secondary container) 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 (primary container), and a clearly written request form.
- f. Ensure that health-care facility laboratories adhere to appropriate biosafety practices and transport requirements according to the type of organism being handled.
- g. Deliver all specimens by hand whenever possible. Do not use pneumatic-tube systems to transport specimens.
- h. State the name of the (suspected) acute respiratory infection of potential concern clearly on the accompanying request form.

VII.12. Critical care of patients

- a. All respiratory equipment must be protected with a high efficient filter eg BS EN 13328-1.
- b. Disposable respiratory equipment should be used wherever possible. Re-usable equipment must, as a minimum, be disinfected in accordance with the manufacturer's instructions.
- c. The ventilator circuit should not be broken unless absolutely necessary.
- d. Ventilators must be placed on standby when carrying out bagging.
- e. Protective clothing detailed above must be worn.
- f. The use of non-invasive positive pressure ventilation equipment carries with it an increased risk of transmission of infection.
- g. Water humidification should be avoided and a heat and moisture exchanger should be used if possible.
- h. Only essential staff should be in the patient's room when aerosol-generating procedures are being carried out.

VII.13. Care of patients in operation theatre

- a. Theatres must be informed in advance.
- b. The patient should be transported directly to the operating theatre and should wear a surgical mask if it can be tolerated.
- c. The patient should be anesthetized and recovered in the theatre.
- d. Staff should wear protective clothing as detailed above.
- e. Disposable anesthetic equipment should be used wherever possible.
- f. Re-usable anesthetic equipment should be decontaminated in line with manufacturer's instructions.
- g. The anesthetic machine must be protected by a filter with viral efficiency to 99.99%
- h. Instruments and devices should be decontaminated in the normal manner. Instruments must be transported safely.
- i. The theatre should be cleaned as per local policy.
- j. Theatres should not be used for 15 minutes after the patient leaves if conventionally ventilated or 5 minutes if ultraclean ventilation used.

VII.14. Handling dead bodies, mortuary care and postmortem examination

The act of moving a recently deceased body onto a hospital trolley for transportation to the morgue might be sufficient to expel small amounts of air from the lungs and thereby present a minor risk.

Packing and transport of dead body to mortuary and to burial

- The body should be fully sealed in an impermeable body bag before removal from the isolation room/area and before transfer to pathology department or the mortuary to avoid leakage of body fluid.
- Transfer to the mortuary should occur as soon as possible after death.
- The body, which is properly packed in the body bag, can be safely removed for storage in the mortuary and sent for burial.
- If an autopsy is being considered, the body may be held under refrigeration in the mortuary and be conducted only when a safe environment can be provided for the autopsy.

Recommended PPE for HCWs handling the dead bodies

- Disposable long-sleeved, cuffed gown, (waterproof, if the outside of body is visibly contaminated with body fluids, excretions or secretions). Alternatively, if no waterproof gown is available, a waterproof apron should be used in addition to the gown.
- Non-sterile, latex gloves (single layer) should cover cuffs of gown.
- If splashing of body fluids is anticipated, use a particulate respirator at least as protective as N95. In addition, use facial protection: face shield (preferably) or goggles.
- Perform hand hygiene after removal of PPE.

Recommended PPE during autopsy

- scrub suits: tops and trousers, or equivalent garments
- single-use, fluid-resistant, long-sleeved gowns
- particulate respirator at least as protective as N95.
- face shield (preferably) or goggles

- either autopsy gloves (cut-proof synthetic mesh gloves) or two pairs of nonsterile gloves
- knee-high boots.

Suggested methods to reduce aerosol-generation during autopsy

- Containment devices should be used whenever possible (e.g. biosafety cabinets for the handling and examination of smaller specimens).
- Vacuum shrouds should be used for oscillating saws.
- High pressure water sprays should not be used.
- Open intestines under water

VIII. Duration of isolation precautions for nCoV infection

1. The duration of infectivity for nCoV infection is unknown. While Standard Precautions should continue to be applied always, additional isolation precautions should be used during the duration of symptomatic illness and continued for 24 hours after the resolution of symptoms.
2. Given that little information is currently available on viral shedding and the potential for transmission of nCoV, testing for viral shedding should assist the decision making when readily available.
3. Patient information (e.g. age, immune status and medication) should also be considered in situations where there is concern that a patient may be shedding the virus for a prolonged period.

IX. Infection prevention and control precautions for aerosol- generating procedures

An aerosol-generating procedure is defined as any medical procedure that can induce the production of aerosols of various sizes, including small (< 5 mkm) particles e.g.

- tracheal intubation and extubation
- non-invasive ventilation
- tracheotomy
- manual ventilation before intubation

- induction of sputum
- positive pressure ventilation via a face mask
- bronchoscopy
- airway suctioning
- cardiopulmonary resuscitation
- surgery and autopsy.

Additional precautions should be observed when performing aerosol-generating procedures, which may be associated with an increased risk of infection transmission, in particular, tracheal intubation.

Additional precautions when performing aerosol-generating procedures

- Wear a particulate respirator (e.g.N95 or higher). When putting on a disposable particulate respirator, always check the seal. **Appendix(2)**
- Wear eye protection (i.e. goggles or a face shield);
- Wear a clean, non-sterile, long-sleeved gown and gloves (some of these procedures require sterile gloves);
- Wear an impermeable apron for some procedures with expected high fluid volumes that might penetrate the gown;
- Use of a hair cover is optional
- Perform procedures in a room with ventilation specifications of airborne infection isolation room if available, or in an adequately ventilated single room; i.e. minimum of 6 to 12 air changes per hour.
- Limit the number of persons present in the room to the absolute minimum required for the patient's care and support.
- Entry and exit from the room should be minimized during the procedure.
- Perform hand hygiene before and after contact with the patient and his or her surroundings and after PPE removal.
- If a room is used and then vacated, the large particles will fall out within seconds. The small aerosol particles will behave almost as a gas. Clearance of any aerosol is dependent on the ventilation of the room. If there is around 12-15 air changes per hour, after about 20 minutes, there would be less than 1 per cent of the starting level (assuming cessation of aerosol generation).

X. References

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Appendix (1): Putting on and removing personal protective equipment (PPE)

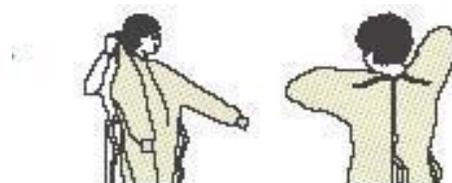
Putting on PPE

PPE should be put on before entering a side room. Put on in the following order:

1. Gown.
2. Mask or Particulate respirator.
3. Eye protection, i.e. goggles or face shield.
4. Disposable gloves.

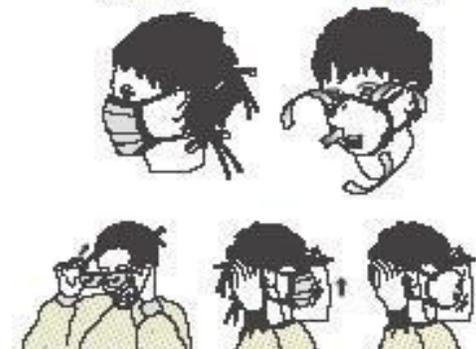
GOWN

1. Fully cover torso from neck to knees, arms to end of wrist, and wrap around the back.
2. Fasten in back at neck and waist.



MASK OR RESPIRATOR

1. Secure ties or elastic band at middle of head and neck.
2. Fit flexible band to nasal bridge.
3. Fit snug to face and below chin.
4. Fit-check respirator.



GOGGLES/FACE SHIELD

1. Put on the face and eyes and adjust to fit.



GLOVES

1. Use non-sterile for isolation.
2. Select according to hand size.
3. Extend to cover wrist of isolation gown.

SAFE WORK PRACTICES

1. Keep hands away from face.
2. Work from clean to dirty.
3. Limit surfaces touched.
4. Change when torn or heavily contaminated.
5. Perform hand hygiene.

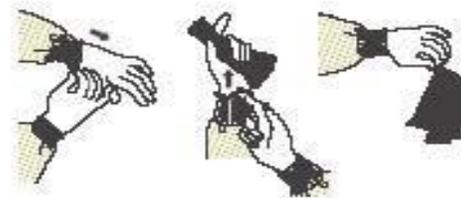
REMOVING PPE

1. PPE should be removed in an order that minimizes the potential for cross-contamination.
2. Except for respirator, remove PPE at doorway or in anteroom.
3. Remove respirator after leaving patient room and closing door.

Sequence for removing PPE is as follows:

GLOVES

1. Outside of gloves are contaminated.
2. Grasp outside of glove with opposite gloved hand; peel off.
3. Hold removed glove in gloved hand.
4. Slide fingers of ungloved hand under remaining glove at wrist.
5. Peel glove off over first glove
6. Discard gloves in waste container.



GOGGLES/FACE SHIELD

1. Outside of goggles or face shield are contaminated!
2. To remove, handle by “clean” head band or ear pieces
3. Place in designated receptacle for reprocessing or in waste container.

GOWN

1. Gown front and sleeves are contaminated!
2. Unfasten neck, then waist ties.
3. Remove gown using a peeling motion; pull gown from each shoulder toward the same hand.
4. Gown will turn inside out.
5. Hold removed gown away from body, roll into a bundle and discard into waste or linen receptacle.



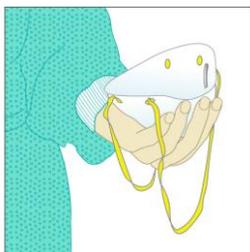
MASK OR RESPIRATOR

1. Front of mask/respirator is contaminated – DO NOT TOUCH!
2. Grasp ONLY bottom then top ties/elastics and remove.
3. Discard in waste container.

HAND HYGIENE

Perform hand hygiene immediately after removing all PPE!

Appendix (2) Particulate respirator seal check



1. Cup the respirator in your hand with the nosepiece at your fingertips allowing the headbands to hang freely below your hand.



2. Position the respirator under your chin with the nosepiece up.



3. Pull the top strap over your head resting it high at the back of your head. Pull the bottom strap over your head and position it around the neck below the ears.



4. Place fingertips of both hands at the top of the metal nosepiece.

Mould the nosepiece (USING TWO FINGERS OF EACH HAND) to the shape of your nose. Pinching the nosepiece using one hand may result in less effective respirator performance



5. Cover the front of the respirator with both hands, being careful not to disturb the position of respirator

5A Positive seal check

-Exhale sharply. A positive pressure inside the respirator= no leakage. If leakage, adjust position and/or tension straps. Retest the seal.

-Repeat the steps until respirator is sealed properly

5B Negative seal check

- Inhale deeply. If no leakage, negative pressure will make respirator cling to your face.

- Leakage will result in loss of negative pressure in the respirator due to air entering through gaps in the seal.

Appendix (3): Suggested checklist for isolation room trolley

The following items should be kept on the trolley at all times so that PPE always is available for HCWs

Equipment	Stock present
Face shield/visor/goggles	
Gloves <ul style="list-style-type: none"> • reusable vinyl or rubber gloves for environmental cleaning • latex single-use gloves for clinical care 	
Hair covers (optional)	
Particulate respirators (N95, or equivalent)	
Medical (surgical or procedure) masks	
Gowns and aprons: <ul style="list-style-type: none"> • Single-use long-sleeved fluid-resistant or reusable non-fluid resistant Gowns • Plastic aprons (for use over non-fluid-resistant gowns if splashing is anticipated and if fluid-resistant gowns are not available) 	
Alcohol-based hand rub	
liquid antiseptic soap for washing hands	
Clean single-use towels (e.g. paper towels)	
Sharps containers	
Appropriate detergent for environmental cleaning and disinfectant for surface or instrument/equipment disinfection	
Large plastic bags	
Appropriate clinical waste bags	
Linen bags	