

Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected

Interim guidance

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Introduction

This is the first edition of infection prevention and control (IPC) guidance when a novel coronavirus (nCoV) is suspected. It has been adapted from WHO's IPC recommendations for MERS-CoV (Infection prevention and control during health care for probable or confirmed cases of Middle East respiratory syndrome coronavirus [MERS-CoV] infection, interim guidance October 2019, WHO/MERS/IPC/15.1 Rev 1¹), based on our current knowledge of the situation in Wuhan, China and experiences with SARS-CoV and MERS-CoV².

WHO will update these recommendations as new information becomes available on the situation in Wuhan, China.

This guidance is intended for health-care workers (HCWs), health-care managers, and IPC teams. Full guidelines are available at *Infection prevention and control of epidemic- and pandemic-prone acute respiratory infections in health care*².

Principles of infection prevention and control strategies associated with health care with suspected nCoV

IPC strategies to prevent or limit infection transmission in health-care settings include the following:

1. Early recognition and source control
2. Application of Standard Precautions for all patients
3. Implementation of empiric additional precautions (droplet and contact and whenever applicable airborne precautions) for suspected cases
4. Administrative controls
5. Environmental and engineering controls

1. Early recognition and source control

Clinical triage including early recognition and immediate placement of patients in separate area from other patients (source control) is an essential measure for rapid identification and appropriate isolation and care of patients with suspected nCoV infection. To facilitate early identification of suspect cases, healthcare facilities should:

- Encourage HCWs to have a high level of clinical suspicion
- Institute screening questionnaire and
- Post signage in public areas reminding symptomatic patients to alert HCWs.

Promotion of respiratory hygiene is an important preventative measure.

Suspected nCoV patients should be placed in an area separate from other patients, and additional IPC (droplet and contact) precautions promptly implemented.

2. Application of Standard Precautions for all patients

Standard Precautions include hand and respiratory hygiene; use of Personal protective equipment (PPE) depending on risk; prevention of needle-stick or sharps injury; safe waste management; environmental cleaning and sterilization of patient-care equipment and linen.

Ensure the following respiratory hygiene measures:

- Offer a medical mask for suspected nCoV infection for those who can tolerate it
- Cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others
- Perform hand hygiene after contact with respiratory secretions.

Personal protective equipment (PPE). Rational, correct³, and consistent use of available PPE and appropriate hand hygiene⁴ also helps to reduce the spread of the pathogens. PPE effectiveness depends on adequate and regular supplies, adequate staff training, proper hand hygiene and specifically appropriate human behaviour².

Ensure that environmental cleaning and disinfection procedures are followed consistently and correctly. Thorough cleaning of environmental surfaces with water and detergent and applying commonly used hospital level disinfectants (such as sodium hypochlorite) is an effective and sufficient procedure. Manage laundry, food service utensils and medical waste in accordance with safe routine procedures².

3. Implementation of empiric additional precautions for suspected nCoV infections

3.1 Contact and Droplet precautions for suspected nCoV infection:

- In addition to Standard Precautions, all individuals, including family members, visitors and HCWs should apply Contact and Droplet precautions
- Place patients in adequately ventilated single rooms. For naturally ventilated general ward rooms this is considered to be 160 L/second/patient⁵;
- When single rooms are not available, cohort patients suspected of nCoV infection together;

- Place patient beds at least 1m apart;
- Where possible, cohort HCWs to exclusively care for cases to reduce the risk of spreading transmission due to inadvertent infection control breaches;
- Use a medical mask (for specifications please see ^{2,6});
- Use eye/facial protection (i.e. goggles or a face shield);
- Use a clean, non-sterile, long-sleeved fluid resistant gown;
- Use gloves;
- Use either single use disposable equipment or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect between each patient use (e.g. ethyl alcohol 70%);
- Refrain from touching eyes, nose or mouth with potentially contaminated hands;
- Avoid the movement and transport of patients out of the room or area unless medically necessary. Use designated portable X-ray equipment and/or other important diagnostic equipment. If transport is required, use pre-determined transport routes to minimize exposures to staff, other patients and visitors and apply medical mask to patient;
- Ensure that HCWs who are transporting patients wear appropriate PPE as described in this section and perform hand hygiene;
- Notify the receiving area of necessary precautions as soon as possible before the patient's arrival;
- Routinely clean and disinfect patient-contact surfaces;
- Limit the number of HCWs, family members and visitors in contact with a patient with suspected nCoV infection;
- Maintain a record of all persons entering the patient's room including all staff and visitors.

3.2 Airborne precautions for aerosol-generating procedures for suspected nCoV infection:

Some aerosol generating procedures have been associated with increased risk of transmission of coronaviruses (SARS-CoV and MERS-CoV) such as tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation and bronchoscopy^{7,8}.

Ensure that HCWs performing aerosol-generating procedures:

- Use a particulate respirator at least as protective as a NIOSH-certified N95, EU FFP2 or equivalent ^{2,6}; when putting on a disposable particulate respirator, always perform the seal-check⁶. Note that if the wearer has facial hair (beard) this can prevent a proper respirator fit⁶.
- Eye protection (i.e. goggles or a face shield);
- Clean, non-sterile, long-sleeved gown and gloves;
- If gowns are not fluid resistant, use a waterproof apron for procedures with expected high fluid volumes that might penetrate the gown²;

- Perform procedures in an adequately ventilated room; i.e. at least natural ventilation with at least 160 l/s/patient air flow or negative pressure rooms with at least 12 air changes per hour (ACH) and controlled direction of air flow when using mechanical ventilation
- Limit the number of persons present in the room to the absolute minimum required for the patient's care and support.

4. Administrative controls²

Administrative controls and policies that apply to prevention and control of transmission of nCoV infections include establishment of sustainable IPC infrastructures and activities; HCWs training; patients' care givers education; policies on early recognition of acute respiratory infection potentially due to nCoV, access to prompt laboratory testing for identification of the etiologic agent; prevention of overcrowding especially in the Emergency department; provision of dedicated waiting areas for symptomatic patients and appropriate placement of hospitalized patients promoting an adequate patient-to-staff ratio; provision and use of regular supplies; IPC policies and procedures for all facets of healthcare provisions - with emphasis on surveillance of acute respiratory infection potentially due to nCoV among HCWs and the importance of seeking medical care; and monitoring of HCW compliance, along with mechanisms for improvement as needed.

5. Environmental and engineering controls

These include basic health-care facility infrastructures⁹. These controls address ensuring adequate environmental ventilation⁵ in all areas within a health-care facility, as well as adequate environmental cleaning. Spatial separation of at least 1-meter distance should be maintained between each suspect patient and others. Both controls can help reduce the spread of many pathogens during health care¹⁰.

Duration of contact and droplet precautions for nCoV infection

Standard precautions should always be applied at all times. Additional contact and droplet precautions should continue until the patient is asymptomatic. More comprehensive information on the nCoV infection mode of transmission is required to define duration of additional precautions.

Collection and handling of laboratory specimens from patients with suspected nCoV

All specimens collected for laboratory investigations 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^{11,12}.

- Ensure that HCWs who collect specimens use appropriate PPE (eye protection, medical mask,

long-sleeved gown, gloves). If the specimen is collected under aerosol generating procedure, personnel should wear a particulate respirator at least as protective as a NIOSH-certified N95, EU FFP2 or equivalent

- Ensure that all personnel who transport specimens are trained in safe handling practices and spill decontamination procedures.
- 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 laboratory request form.
- Ensure that health-care facility laboratories adhere to appropriate biosafety practices and transport requirements according to the type of organism being handled.
- Deliver all specimens by hand whenever possible. DO NOT use pneumatic-tube systems to transport specimens.
- Document patients full name, date of birth of suspected nCoV of potential concern clearly on the accompanying laboratory request form. Notify the laboratory as soon as possible that the specimen is being transported.

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