CORONA VIRUS ALERT
FOR
ALL TRAVELLERS

Who Have Visited China, particularly through Wuhan City, Hubei Province of China during past 14 days and
Are having one or more of the following symptoms: Acute onset of Fever, Cough, Shortness of Breath

SHOULD REPORT TO AIRPORT HEALTH UNIT / IMMIGRATION

• For other Travellers (those without any Symptoms)

Travellers, who have visited the affected CITY and do not have any symptoms on arrival, but develop above mentioned symptoms within 28 days of arrival in India, should visit nearest hospital facility and report to the State/District Health Authorities and concerned Airport Health Officer.

In case you develop symptoms such as fever and cough within 28 days of leaving this airport, restrict your outdoor movement and contact MoHFW’s 24 hours helpline number 011-23978046. Call operator will tell you whom to contact further. In the meanwhile, keep yourself isolated in your house/room.
Data as reported by: 26 January 2020

SUMMARY

Situation update:

- On 26 January 2020, the number of reported confirmed cases of novel coronavirus (2019-nCoV) has increased by 694 cases since the last situation report published yesterday.
- A total of 2,014 confirmed 2019-nCoV cases have been reported globally;
- Of the 2,014 cases reported, 1,985 cases were reported from China, including Hong Kong SAR (5 confirmed cases), Macau SAR (2 confirmed cases) and Taipei (3 confirmed cases).
- Twenty-nine confirmed cases have been reported outside of China in ten countries (see table-1).
  - Of these 29 exported cases, 26 had a travel history from Wuhan City, China.
- Among the three cases identified in countries outside of China:
  - One case in Australia had direct contact with a confirmed case from Wuhan while in China;
  - One case in Australia reported today; travel history is not yet known.
  - One case in Viet Nam had no travel history but was in contact with a confirmed case (his father with travel history to Wuhan), resulting from human to human transmission within a family.
- Of the 1,975 confirmed cases (excluding Hong Kong SAR, Macau SAR and Taipei), 324 cases have been reported as severely III.
- Fifty-six deaths have been reported to date (52 deaths in Hubei province and 4 from outside Hubei).

WHO’s assessment of the risk of this event has not changed since the last risk assessment conducted on 22 January: very high in China, high at the regional level and high at the global level.

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1 The situation report includes information reported to WHO Geneva by 10 AM CET
2 Severe illness: According to any of the following criteria:
   (1) shortness of breath; (2) respiratory rate more than 30 bpm; (3) hypoxemia; (4) chest X-ray with multi-lobar infiltrates or pulmonary infiltration progressed more than 50% within 24 - 48 hours.
3 Note: Error in situation reports published on 23, 24 and 25 January as originally published, which incorrectly summarized the risk for global level to be moderate.
Figure 1. Countries, territories or areas with reported confirmed cases of 2019-nCoV, 26 January 2020

Distribution of 2019-nCoV cases as of 26 January 2020

Country, area or territory with cases

1 - 10

> 10
I. SURVEILLANCE

Limiting international spread of 2019-nCoV depends on understanding the global epidemiology. Key questions that global surveillance must answer include the following:

- How fast is 2019-nCoV spreading from China to other countries?
- Where are cases exported from and to?
- What types of exposures are reported by travellers originating in Wuhan or in other provinces in China reporting cases and human to human transmission?
- Are individuals symptomatic before travel and potentially detectable through exit or entry screening?
- Is there person-to-person transmission occurring in countries reporting imported cases?
- What is the clinical presentation of illness among travellers?


Reported incidence of confirmed 2019-nCoV cases

Table 1. Countries, territories or areas with reported confirmed cases of 2019-nCoV, 26 January 2020

<table>
<thead>
<tr>
<th>WHO Regional Office</th>
<th>Country/Territory/Area</th>
<th>Confirmed Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Pacific</td>
<td>China*</td>
<td>1,985</td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Republic of Korea</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Viet Nam</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Singapore</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Malaysia</td>
<td>3</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>Thailand</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Nepal</td>
<td>1</td>
</tr>
<tr>
<td>Region of the Americas</td>
<td>United States of America</td>
<td>2</td>
</tr>
<tr>
<td>European Region</td>
<td>France</td>
<td>3</td>
</tr>
<tr>
<td>Total Confirmed cases</td>
<td>Total</td>
<td>2,014</td>
</tr>
</tbody>
</table>

*Confirmed cases in China include cases confirmed in Hong Kong SAR (5 confirmed cases), Macau SAR (2 confirmed cases) and Taipei (3 confirmed cases).
Figure 2: Epidemic curve by date of onset of 2019-nCoV cases identified outside of China, 26 January 2020

N.B. Of 23 cases reported outside China, date of onset of disease is missing for 2 cases that were reported on 17, 21, 25 and 26 January 2020. Investigations into these cases is ongoing.
II. PREPAREDNESS AND RESPONSE:

WHO:

- WHO has been in regular and direct contact with Member States where cases have been reported. WHO is also informing other countries about the situation and providing support as requested.
- Developed the surveillance case definitions and reporting forms for human infection with 2019-nCoV and is updating it as the new information becomes available.
- Developed interim guidance for laboratory diagnosis, clinical management, infection prevention and control in health care settings, home care for patients with suspected novel coronavirus, risk communication and community engagement.
- Prepared disease commodity package for supplies necessary in identification and management of confirmed patients.
- Provided recommendations to reduce risk of transmission from animals to humans.
- WHO has published an updated advice for international traffic in relation to the outbreak of the novel coronavirus 2019-nCoV.
- Activation of R&D blueprint to accelerate diagnostics, vaccines, and therapeutics.
- WHO is providing guidance on early investigations. The first protocol that is available is a: Household transmission investigation protocol for 2019-novel coronavirus (2019-nCoV) infection.
- WHO has developed an online course to provide general introduction to emerging respiratory viruses, including novel coronaviruses.
- WHO is providing guidance on early investigations, which are critical to carry out early in an outbreak of a new virus. The data collected from the study protocols can be used to refine recommendations for surveillance and case definitions, to characterize the key epidemiological transmission features of 2019-nCoV, help understand spread, severity, spectrum of disease, impact on the community and to inform operational models for implementation of countermeasures such as case isolation, contact tracing and isolation. The first protocol that is available is a: Household transmission investigation protocol for 2019-novel coronavirus (2019-nCoV) infection.
- WHO is working with its networks of researchers and other experts to coordinate global work on surveillance, epidemiology, modelling, diagnostics, clinical care and treatment, and other ways to identify, manage the disease and limit onward transmission. WHO has issued interim guidance for countries, updated to take into account the current situation.
- Utilizing global expert networks and partnerships for laboratory, infection prevention and control, clinical management and mathematical modelling.

WHO is working with networks of specialists to analyze 2019-nCoV full genome sequences as they become available.

WHO has not received evidence that the virus has changed. WHO awaits further information from Chinese officials.
Current estimates of the incubation period range from 2-10 days, and these estimates will be refined as more data become available. Understanding the time when infected patients may transmit the virus to others is critical for control efforts. In previous outbreaks of other coronavirus, such as Middle East Respiratory Syndrome coronavirus (MERS-CoV), some individuals can be asymptomatic and transmit to others. Detailed epidemiological information from more people infected is needed to determine the infectious period of 2019-nCoV.

WHO has issued advice to people on how to protect themselves from 2019-nCoV infection, as for any virus that spreads via the respiratory route: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

In addition, it is vitally important in health care settings, that health care workers are able to protect themselves from infection. WHO guidance on infection prevention and control measures in health care facilities is here: https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected

The strategic objectives of the response are to interrupt the transmission of the virus from one person to another in China, to prevent exportation of cases from China to other countries and territories, and to prevent further transmission from exported cases if they were to happen. This can be achieved through a combination of public health measures, such as rapid identification, diagnosis and management of the cases, identification and follow up of the contacts, infection prevention and control in healthcare settings, implementation of health measures for travellers, awareness raising in the population, risk communication.

During previous outbreaks due to other coronavirus (Middle-East Respiratory Syndrome (MERS) and the Severe Acute Respiratory Syndrome (SARS), human to human transmission occurred through droplets, contact and fomites, suggesting that the transmission mode of the 2019-nCoV can be similar. The basic principles to reduce the general risk of transmission of acute respiratory infections include the following:

- Avoiding close contact with people suffering from acute respiratory infections.
- Frequent hand-washing, especially after direct contact with ill people or their environment.
- Avoiding unprotected contact with farm or wild animals.
- People with symptoms of acute respiratory infection should practice cough etiquette (maintain distance, cover coughs and sneezes with disposable tissues or clothing, and wash hands).
- Within healthcare facilities, enhance standard infection prevention and control practices in hospitals, especially in emergency departments.

WHO does not recommend any specific health measures for travellers. In case of symptoms suggestive of respiratory illness either during or after travel, the travellers are encouraged to seek medical attention and share their travel history with their health care provider. Travel guidance was updated on 24 January.
III. COUNTRY RESPONSE:

China:

- Public education on disease prevention and environmental hygiene further strengthened in public places across the city, farmers' markets in particular. As of 23 January, the National Health Commission revised protection standards and specifications for medical workers and strengthened prevention and control measures against 2019-nCoV in hospitals.
- National authorities are conducting active case finding in all provinces.
- Search expanded for additional cases within and outside of Wuhan.
- Active / retroactive case finding in medical institutions in Wuhan.
- The Huanan Seafood Wholesale Market in Wuhan was closed on 1 January 2020 for environmental sanitation and disinfection. Market inspection in expansion to other markets.
Resources:

- Technical interim guidance for novel coronavirus, WHO.  
  https://www.who.int/emergencies/diseases/novel-coronavirus-2019
- WHO travel advice for international travel and trade in relation to the outbreak of the novel coronavirus 2019-nCoV.  
- WHO Regional Office for Europe: 2019-nCoV outbreak: first cases confirmed in Europe.  
- Press statements by KCDC (in Korean)  
  https://www.cdc.go.kr/board/boardView.do?mId=105010000000&bid=0015
  http://www.wuhan.gov.cn/zh/hjwh/202001/7102a0d9e39847c0b675b0b5780d8f58.htm
- Disease outbreak news: Novel Coronavirus.  
  https://www.whoint/hr/en/
  https://cdc.moph.go.th/viralpneumonia/index.html
  https://www.mhlw.go.jp/stf/houdou/10000000.html
- Notice sent out from Health and Food Safety Planning Division, Quarantine Station Operation Management Office (in Japanese).  
  https://www.mhlw.go.jp/content/10000000/000582957.pdf
- Situation report by WHO on Novel Coronavirus (2019-nCoV).  
  https://www.who.int/emergencies/diseases/novel-coronavirus-2019
- CDC press release: First Travel-Related Case of 2019 Novel Coronavirus Detected in United States.  
- Hong Kong SAR Department of Health: Press Release.  
  https://www.info.gov.hk/gia/general/20200117/pr99570.htm
- Epidemic Prevention Measures, Macau SAR Health Bureau.  
  https://www.ssm.gov.mo/appsl/Pages/PreventViralInfection.aspx?pl=17048
- Press release on 23 January 2020, Ministry of Health Singapore.  
- New South Wales Government: Health. Coronavirus cases confirmed in NSW.  
Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected

Interim guidance
January 2020

WHO/2019-nCoV/IPC/v2020.1

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 1), 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.

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, correct1 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/patient2;
- 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 25);
- 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 24.

Ensure that HCWs performing aerosol-generating procedures:
- Use a particulate respirator at least as protective as a NIOSH-certified N95, EU FFP2 or equivalent 25; when putting on a disposable particulate respirator, always perform the seal-check 6. Note that if the wearer has facial hair (beard) this can prevent a proper respirator fit 6.
- 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 gown 24.
- 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 controls 24

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 infrastructures 9. These controls address ensuring adequate environmental ventilation 2 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 care 10.

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

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.

Acknowledgements

The original version of the MERS-CoV IPC guidance was developed in consultation with the WHO Global Infection Prevention and Control Network and Emerging Disease Clinical Assessment and Response Network and other international experts. WHO thanks those who were involved in the development and updates of IPC documents for MERS-CoV.

References


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The main aim of the national capacities review tool is to better understand existing capacities in the area of detection and response to a novel coronavirus (nCoV) that is zoonotic and causes respiratory disease. The tool was developed with other coronaviruses, such as SARS-CoV and MERS-CoV, in mind and in consultation with member states. This information will help national authorities to i) identify main gaps ii) perform risk assessments and iii) plan for additional investigations, response and control actions.

I. DETECTION

National Laboratory System

1. Which coronaviruses (CoV) diagnostic tests is the country capable of conducting?
   a. List the laboratories testing for CoV from human and animal health sectors along with the tests performed (PCR-CoV specific or panCoV, sequencing, culture, serology, others)?
   b. How many samples can each of these lab(s) process every day?
   c. Does the country have a quality assurance program to ensure the quality of testing for CoVs by these laboratories (e.g. accreditation schemes, EQA program (proficiency-testing or rechecking), access to positive quality control materials)? Please list what is in place and the current gaps.
   d. Are there national guidelines for clinicians on laboratory testing for SARI or CoV (including the specimens to be collected and tests to be requested)?

2. Currently, which CoV diagnostic tests are conducted in the country?

3. How are laboratory data shared between human and animal health laboratories and with surveillance system(s)?

4. Please describe the structure of the laboratory system, including number of public health and animal labs, at local, intermediate levels/district, and national levels.
   a. Does the country have a national reference laboratories for CoV?
   b. Are there hospital laboratories testing for CoV? If so, which hospitals?
   c. Do local clinicians have the custom of using the laboratory system? Are there national guidelines for clinicians on which specimens should be collected for SARI/nCoV?
   d. What systems exist for returning laboratory results back to practitioners? How long does this take?
   e. How many samples can each of the lab(s) process for molecular testing (RT-PCR)?

5. Have national laboratories been accredited for CoV?
   a. If yes, to what standard?
b. Are guidelines and protocols for quality management system enforced and in use by public and animal health laboratories?

c. Is there a national body that oversees Internal Quality Controls and External Quality Assessment schemes for public health laboratories at national, regional and local levels?

6. How is laboratory data on zoonotic diseases shared between human and animal health laboratories?

7. Is Personal Protective Equipment available and used by laboratory staff?

8. Is the specimen referral network documented for nCoV?
   a. Is there an arrangement with an overseas laboratory for testing when novel respiratory pathogen is suspected?
   b. Are there infectious substance certified shippers at key laboratories which may ship the specimens abroad?
   c. Are funds available to ship specimens?
   d. Are triple packages available to ship specimens?
   e. Are MTAs in place with overseas laboratories?
   f. Are laboratories able to receive specimens from abroad for testing for CoVs/nCoV (e.g., import permits)? If yes, are they willing to test at no charge for WHO or other Member States and/or assist with shipping costs?

9. Are standardized SOPs in place for specimen collection, packaging, and transport for emerging pathogens?

10. Does the country have a national EQA program (proficiency-testing or rechecking) for CoVs?

**Surveillance and Risk Assessment**

1. Is there an event-based surveillance system in place?

2. Does the country have the ability to quickly enhance current surveillance?
   a. Can triggers/criteria/case definitions for investigation be quickly added to the system?
   b. Does the country have a system to inform HCWs and labs of the criteria to test and signal and who to report to, including the private sector?

3. Is there a functioning respiratory disease surveillance system in place, such as ILI, SARI, ARI or pneumonia surveillance systems?

4. Is a nCoV infection a national notifiable disease?
   a. Have health authorities conducted specific training/s on the use of case definitions, how to identify suspected cases on a clinical basis as well as initiate early case management and contact tracing?

5. Is the private sector included in the respiratory surveillance system?

6. Do the public health staff at local/regional and/or national levels have the skills to analyze the surveillance data to detect SARI/pneumonia outbreaks/clusters?

7. For zoonotic pathogens, is data shared between human and animal health sectors? If so, how?

8. Does capacity exist to conduct risk assessment using available multiple sources of information?

9. Does the country have tools to collect, report, analyze case-based information?
Rapid Response Team (RRT)

1. Are there Public Health RRTs available in the country?
2. How are RRTs identified and assigned when alerts are identified?
   a. If yes, are the RRTs available at both national and subnational level?
   b. What disciplines are included in the RRTs? Do the RRTs also include representatives from the animal sector?
   c. Are the RRTs trained for respiratory disease outbreaks, including emerging diseases/pneumonia/SARI outbreak/cluster investigation?
   d. Are the needed resources (logistics and financial) secured to ensure the timely response?
3. Are there guidelines, SOPs and contact tracing and follow up forms available with the teams?
4. Is Personal Protective Equipment available for RRTs? Are they trained to use PPE properly/how is PPE use evaluated?
5. Are RRT trained specifically in contact tracing?
6. Are RRT trained in biological sample collection for respiratory pathogens?
7. Does the country have surge capacity for contact tracing?
8. Does the country have tools to follow up cases and contacts?

II. RESPONSE

Command and Coordination

1. Does the country have a national public health emergency preparedness and response plan that can address respiratory diseases including novel coronaviruses?
2. Does an Emergency Operation Center (EOC)/Incident Management Structure (IMS) exist in the country?
3. Is there a multisectoral commission or a multidisciplinary emergency response committee?
   a. How are other Ministries involved in emerging diseases preparedness and response?
4. Are there other partners willing to be involved in the emergency response?
5. Is there political engagement should there be an event?
6. Is there dedicated financial support for emerging disease surveillance, preparedness and response in the country?
7. Are there dedicated public health laws related to infectious diseases (e.g., quarantine, restriction of movement)?

Risk Communication

1. Is there a team of risk communication, communications or health promotion professionals at the national and subnational levels who are trained in risk communication and can be called upon to design and implement risk communication strategies during crises? Is there surge support available within the government, in partner agencies or elsewhere to cover increased communication needs during a public health crisis?
2. Are risk communication personnel invited to participate as equal partners in risk assessment, in rapid response teams and at response coordination meetings (e.g. at the public health emergency operations center)?

3. Are there mechanisms in place for the rapid clearance of timely and transparent communication messaging and materials in such crisis situations? Do those in senior government leadership – including those outside of the Ministry of Health or equivalent – understand the importance of releasing timely and transparent information to protect the public’s health even when there is uncertainty (e.g. the cause, effective treatment, severity of pathogen) or when there may be political sensitivities.

4. Is it clear which government agency is leading on risk communication for an event of this nature and how communication will be coordinated across ministries and partners, and across different levels of government (e.g. which agency speaks first on which issue, what specific topics and audiences will be best addressed through which agency/partner, how will messaging be aligned)?

5. Is there capacity to develop and implement strategies to engage with at-risk or affected communities, including through their influencers (e.g., community leaders, religious leaders, health workers, traditional healers, etc.) and existing networks (e.g. women’s groups, community health volunteers, unions, social mobilizers for polio, malaria, HIV)?

6. Are there systems in place to detect and quickly respond to misunderstandings, misinformation, rumors and frequently asked questions detected through the monitoring of media coverage, social media and hotlines or through healthcare worker and/or community networks? Is there a mechanism in place to utilize this information for revising risk communication strategy?

Point of Entry

1. Is there a public health emergency contingency plan, that can be used for potential nCoV events, in place at each designated PoE?
   a. Are staff working at PoE aware of the appropriate action to manage ill passenger(s) detected before boarding, on board conveyances (such as planes and ships) and on arrival at PoE?
   b. Is a stockpile of PPE in place at PoE for assessing ill travelers?
   c. Is there an appropriate place for rapid health assessment and isolation, in the event of detecting a potential nCoV case at PoE?
   d. Is there a mechanism for safely transporting ill travelers to designated hospitals, including the identification of adequate ambulance services?
   e. Are procedures and means in place for communicating information on ill travelers between conveyances and PoE, as well as between PoE and national health authorities?
   f. Have ground services for environmental cleaning and disinfection at PoE been identified? If so, has the cleaning and disinfection protocol for potential nCoV events been put in place?

2. Are there means to provide incoming and outgoing travelers from/to affected countries, as well as travel, transport and tourism sectors with relevant information about the disease?

Case Management

1. Are there medical teams trained on SARI case management?
2. Are there ambulance teams trained to transport SARI patients?
3. Are there specific health facilities assigned to provide care to a patient/s with SARI?
   a. Are any health facilities designated to manage patients with CoV infection?
4. Do the health care facilities have the appropriate knowledge, training and sensitivities to carry out safe and respectful burials?
5. What is the ICU capacity in country?
6. What provisions for mechanical ventilation, N95 masks, surgical masks, gloves, coveralls, etc.?

Infection Prevention and Control
1. Is there a functioning IPC program in each hospital/health care facility in the area where cases are suspected/identified/transferred?
2. Is there a national IPC authority that has developed IPC guidance and/or monitor IPC at the hospital level? Does the national IPC authority gather, analyze, document, and report data on health care-associated infections HAI at the country level?
3. Is the triaging system for patients with Acute Respiratory Illness (ARI) applied in the health facilities? If so, is the triage system adequate?
4. Are standard and/or droplet precautions are applied for all patients with suspected, or a confirmed high threat pathogen?
5. Are airborne precautions applied for all patients who require aerosol-generating procedures?
6. Is there a need/plan for patient placement and transportation based on the clinical status of nCoV patient?
7. What isolation facilities are available for nCoV patients?
8. What controls are/would be in place to limit visitors of patients and require PPE for visitors of nCoV patients?
9. Is Personal Protective Equipment available for medical staff? If so, what PPE is available, how is it used/use assessed?
10. Does a protocol/strategy for environmental cleaning and disinfection exist? If so, is it adequate?
11. Does a system for the proper collection and disposal of nCoV contaminated medical waste exist?
12. Is there an infection control team responsible to follow up exposed HCWs and decide to permit a healthcare worker to resume his/her work? What policies are in place to test and isolate (if positive) HCWs in contact with patients?
13. Is there a strategy to deal with patient's exposed to a confirmed nCoV patient available?

Logistics, Procurement and Supply Management
1. Is there a Logistics & Supply focal point in the country assigned to the response and is able to link with all pillars for supply forecasting?
2. Is there a procurement mechanism in place in the country?
3. Is there a sufficient storage capacity in the country?
4. Is there a stock management system available in the country?
5. Is there a transport & distribution system available in the country?
Risk communication and community engagement readiness and initial response for novel coronaviruses (nCoV)

Interim guidance v1
January 2020
WHO/2019-nCoV/RCCE/v2020.1

This document provides WHO checklists for risk communication and community engagement (RCCE) readiness and initial response for novel coronaviruses (nCoV) recently identified in Wuhan, China (2019-nCoV). The objective of this document is to provide actionable guidance for countries to implement effective RCCE strategies which will help protect the public’s health in the early response to nCoV. This document includes recommended RCCE goals and actions for countries preparing for nCoV cases and for countries that have confirmed -nCoV cases.

WHO will update these recommendations as new information becomes available on the situation in Wuhan, China. This interim guidance was adapted from WHO’s RCCE guidance and training materials.

Why is it important to include RCCE as part of a national public health emergency response?

Every public health emergency faces new communication challenges and lessons learned. These challenges can lead to a range of outcomes including loss of trust, reputation, economy, and at worst case — lives. While there are always new lessons to be learned, there are actions we know will work. This is a call to leaders to ensure RCCE is an essential role in your health emergency preparedness and response for the following reasons:

One of the most important and effective interventions in public health response to any event is to proactively communicate what is known, what is unknown and what is being done to get more information with the objective of saving lives and minimizing adverse consequences.

RCCE helps prevent infodemics (the spread of misinformation), builds trust in the response and increases the probability that health advice is followed. It minimizes and manages false rumours and misunderstanding that undermine response and may lead to further disease spread.

Proactive communication and engagement with the public and at risk populations on a consistent basis can help alleviate confusion and misunderstanding.

People have the right to be informed and understand the health risks they face, in addition to that of their loved ones.

The perception of risk among affected populations often differs from that of experts and authorities. Effective RCCE can help bridge that gap by determining what people know, feel and do related to disease outbreaks, as well as what they ought to know and do to bring the outbreak under control. Effective RCCE helps transform and deliver complex scientific knowledge which is understood by, accessible to, and trusted by populations and communities.

Effective RCCE uses community engagement strategies to involve communities in the response and develops acceptable yet effective interventions to stop further amplification of the outbreak and for individual and group protective measures.

RCCE is essential for surveillance, case reporting, contract tracing, caring for the sick and clinical care, gathering local support for any logistic and operational needs of the response.
RCCE readiness checklist for countries preparing for a possible outbreak

Goals

- Prepare to communicate with unknown information and uncertainty
- Assess national and subnational communication capacity (persons and resources)
- Identify the main actors, and form partnerships
- Plan for activation and implementation of RCCE plan
- Train emergency RCCE staff and potential surge staff on plans and procedures

Action steps

**Risk Communication Systems**

- Ensure that highest levels of government agree to include RCCE in preparedness and response activities and is ready to release information to protect the public’s health rapidly, transparently and accessibly
- Review existing RCCE plan and consider adjustments for a respiratory outbreak
- Agree on procedures for timely release of information such as clearance procedures for messages and information products – keep clearance chains short
- Prepare a budget for communication (including scale-up)
- Set up a RCCE team and define roles and responsibilities

**Internal and partner coordination**

- Identify partners to include other agencies, organizations, community planners, health care workers, etc., with their contact information (in the case of this outbreak consider Ministry of Agriculture, Travel and Tourism, hospital systems, etc.) – should an outbreak occur, these partners should be activated into a multi-sectoral RCCE response team
- Assess the communication capacity of all relevant partners – identify typical target audiences and channels of communication used by partners
- Plan and agree on communication roles and responsibilities through standard operating procedures (SOPs) (e.g. which agency speaks first on which issue, what specific topics and audiences will be best addressed through which agency/partner, how will messaging be aligned)

**Public communication**

- Review the roster of spokespeople at all levels, listing their expertise in anticipated public health threats, and, if necessary, train them
- Produce and pre-test message templates
- Identify key media; create and update a list of journalists, and foster media relations
- Identify media and other communication channels and influencers and assess their potential reach for potential target audiences – use channels and influencers trusted, preferred and regularly used by target audiences

**Communication engagement with affected communities**

- Establish methods for understanding the concerns, attitudes and beliefs of key audiences
- Identify target audiences, and gather information on their knowledge and behaviours (e.g. who they trust, how they are likely to receive information, their daily habits, their concerns, etc.)
- Identify existing community influencers (e.g. community leaders, religious leaders, health workers, traditional healers, etc.) and networks (e.g. women’s groups, community health volunteers, unions, social mobilizers for polio, malaria, HIV) that can be repurposed for community engagement

**Addressing uncertainty, perceptions and misinformation management**

- Prepare to begin communicating before the full picture is known by ensuring leaders agree to communicate with
- Establish a system for monitoring and, if necessary, responding to rumours, misinformation and frequently asked questions

**Capacity building**

- Consider training needed for RCCE responders on what is known and unknown about novel coronavirus, current plans and procedures as well as sub-national preparation for RCCE response
RCCE initial response checklist for countries where one or more cases have been identified

Goals

- Adapt and apply action steps from readiness checklist above if not already completed
- Establish, build and/or maintain trust with population through regular two way communication and engagement that regularly addresses misunderstanding, misinformation, rumours and frequently asked questions
- Encourage people to adopt protective behaviours
- Manage expectations and communicate uncertainties
- Coordinate and encourage collaboration among response partners
- Assess initial risk perception of affected and at risk populations
- Provide information and guidance

Action steps

Risk Communication Systems

- Adapt existing RCCE plan to the response, and activate the RCCE response team and plan
- Identify and activate spokespersons for the emergency
- Draw up timelines for communication activities and products
- Monitor RCCE response by identifying processes that delay information release and create confusion among affected populations

Internal and partner coordination

- Activate SOPs for RCCE coordination with other response agencies and partners
- Link national, regional and local RCCE operations
- Assign responsibilities for internal (to each response agency) and external (to the public) communication
- Coordinate message preparation, consistency and dissemination

Public communication

- Announce the health threat early and often and update after a risk assessment and an analysis of risk perception
- Provide information as soon as it is received, even if it is not complete and openly explain the degree to which information is uncertain (manage uncertainty), provide the public regular channels to get updated information (e.g. hotlines, website, etc.)
- Use trusted and effective communication channels that target audiences regularly use
- Identify and activate trusted influencers for the audiences

Communication engagement with affected communities

- Conduct a rapid risk perception analysis based on existing formal and informal information
- Segment the audiences for the communication response (e.g. affected people, health care workers, political leaders, donors, etc.)
- Translate materials into relevant languages and adapt to literacy levels

Addressing uncertainty, perceptions and misinformation management

- Communicate what is known and what is not known - explain degree to which uncertainty still exists
- Activate rumour monitoring, verification and response mechanisms
- Monitor mass and social media, hotlines, health care worker feedback from patients and community concerns and continually apply feedback into adapted RCCE strategy

Capacity building

- Plan regular updated guidance to all RCCE responders
- Train surge staff
- Consider training leaders, responders and spokespeople on RCCE guidance as needed

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Laboratory testing of human suspected cases of novel coronavirus (nCoV) infection
Interim guidance
10 January 2020

1. Introduction

The purpose of this document is to provide interim guidance to laboratories and stakeholders involved in laboratory testing of patients who meet the definition of suspected case of pneumonia associated with a novel coronavirus identified in Wuhan, China (See: Surveillance case definitions for human infection with novel coronavirus, Interim guidance v1, January 2020, WHO/2019-nCoV/Surveillance/v2020.1).

For the basis of this document various existing WHO documents have been used and adapted for its purpose, including WHO laboratory guidance for MERS-CoV (1-11). As information about the etiology, clinical manifestations and transmission of disease in the cluster of respiratory disease patients identified in Wuhan is limited, WHO continues to monitor developments and will revise these recommendations as necessary.

The etiologic agent responsible for the cluster of pneumonia cases in Wuhan has not yet been fully verified, but a novel Betacoronavirus has reportedly been cultured from at least one pneumonia patient and characterized by electron microscopy and genome sequencing and has been detected by PCR in 15 other patients (12). It is expected that full gene sequence and other information on the putative causative agent will soon be available that can inform the development of specific diagnostic tests. Until that time, the goals of diagnostic testing are to detect suspect cases early, to support disease control activities, and to work with reference laboratories that can perform pathogen discovery and additional testing to clarify the pathogenic role of the putative emergent cause of respiratory disease.

2. Suspected case definition

For case definition see the following document: WHO Surveillance case definitions for human infection with novel coronavirus.

3. Specimen collection and shipment

Rapid collection and testing of appropriate specimens from suspected cases is a priority and should be guided by a laboratory expert. As the causative agent has not been verified and the gene sequence of the putative coronavirus not yet published, multiple tests may need to be performed and sampling sufficient clinical material is recommended. Local guidelines should be followed regarding patient or guardian's informed consent for specimen collection, testing and potentially future research.

Assure SOPs are available, and the appropriate staff is trained and available for appropriate collection, specimen storage, packaging and transport. There is still limited information on the risk posed by the reported coronavirus found in Wuhan, but it would appear samples prepared for molecular testing could be handled as would samples of suspected human influenza (2, 7-9). Attempts to culture the virus require a higher level of biosecurity.

Samples to be collected (see Table 1 for details on sample collection and storage):

1. Respiratory material* (nasopharyngeal and oropharyngeal swab in ambulatory patients and sputum (if produced) and/or endotracheal aspirate in patients with more severe respiratory disease)
2. Serum for serological testing, acute sample and convalescent sample (this is additional to respiratory materials and can support the identification of the true agent, once serologic assay is available)
3. Other specimens to consider in unresolved cases: blood for culture, urine for Legionella and pneumococcal antigen detection

*To be modified once information is available on whether upper or lower respiratory material is the better sample for detection of the putative coronavirus.

A single negative test result, particularly if this is from an upper respiratory tract specimen, does not exclude infection. Repeat sampling and testing, lower respiratory specimen is strongly recommended in severe or progressive disease. A positive alternate pathogen does not necessarily rule out either, as little is yet known about the role of coinfections.

Reference 2, 3, 7
Diagnostic algorithm for patients that meet the suspected case definition

Until the cause of respiratory disease originating in Wuhan is confirmed and a diagnostic test available, patients that meet the suspected case definition should be screened for common causes of respiratory illness according to local guidelines (1,5,7). When results of the screening are negative, a sample should be sent to a regional, national or international reference laboratory with pathogen discovery capability (e.g., sequencing, electron microscopy, viral culture). WHO can assist Member States to identify laboratories able to provide this support. Once the causative agent of this outbreak is verified and test reagents made available, specific diagnostics directed to this agent can be added to the diagnostic algorithms.

Example of differential diagnosis for pneumonia in outbreak settings:

Viral infections such as influenza -A, -B, and -C virus, adenovirus, MERS, SARS coronavirus, other human coronaviruses, respiratory syncytial virus, paramyxovirus virus 1-4, human metapneumovirus, rhinovirus/enterovirus.

Bacterial infections such as Streptococcus pneumoniae, Haemophilus influenza, Streptococcus-pyogenes, Legionnaires’ disease/Pontiac fever (Legionella pneumophila, and Legionella non-pneumophila), anthrax, leptospirosis and atypical bacterial infection such as mycoplasma and Chlamydia pneumoniae and psittaci, Q-fever (Coxiella burneti), mycobacterial infections and in specific patient groups opportunistic infections such as PJP and fungal infections. The possibility of exposure to non-infectious agents (e.g. toxins, radiation) should also be considered depending on the clinical syndrome.

*Needs adaptation in relation to local guidelines, regional occurrence of disease, specific patient risk factors and clinical presentation.

Note: Coinfections and bacterial superinfections can occur, and non-obligate pathogens detected might not be the cause of illness.

Safety procedures during sample collection and transport

All specimens collected for laboratory investigations should be regarded as potentially infectious, and HCWs who collect, or transport clinical specimens should adhere rigorously to infection prevention and control guidelines and national or international regulations for the transport of dangerous goods (infectious substances) to minimize the possibility of exposure to pathogens (14). Though the mode of transmission of the causative agent(s) is not established, HCWs should assume the potential for respiratory spread. Implement the highest available level of achievable infection prevention and control precautions according to protocol until the mode of transmission and risk from infection is clarified (11).

Infection prevention measurements for a novel coronavirus (route of transmission unknown but suspected to be respiratory)

Ensure that Health Care workers (HCWs) who collect specimens follow the following guideline and use the adequate PPE. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected, interim guidance, January 2020 (11) and other IPC guidance (10, 15-17).

Ensure that HCWs performing aerosol-generating procedures (i.e. aspiration or open suctioning of respiratory tract specimens, intubation, cardiopulmonary resuscitation, bronchoscopy) use additional precautions (for details see detailed guidelines mentioned above).

Respirators (NIOSH-certified N95, EU FFP2 or equivalent, or higher level of protection). When putting on a disposable particulate respirator, always check the seal/fitness. Be aware that the presence of facial hair (e.g. beard) may prevent a proper respirator fit for the wearer. In some countries, a powered air-purifying respirator (PAPR) is utilized instead of a respirator.

- Eye protection (i.e. goggles or a face shield).
- Clean, non-sterile, long-sleeved gowns and gloves. Note that some procedures require sterile gloves. If gowns are not fluid resistant, a waterproof apron should be used for procedures where it is expected that high fluid volumes might penetrate the gown.
- Perform procedures in an adequately ventilated room: at a minimum natural ventilation with at least 160l/s/patient air flow, or negative pressure rooms with at least 12 air changes per hour and controlled direction of air flow when using mechanical ventilation.
- Limit the number of persons present in the room to the minimum required for the patient’s care and support; and
- Follow WHO guidance for steps of donning and doffing PPE. Perform hand hygiene before and after contact with the patient and his or her surroundings and after PPE removal.
- Waste management and decontamination procedures: Ensure that all materials used is disposed appropriately. Disinfection of work areas and decontamination of possible spills of blood or infectious body fluids should follow validated procedures, usually with chlorine-based solutions.

Specifics for transport of samples to laboratory:
- Ensure that personnel who transport specimens are trained in safe handling practices and spill decontamination procedures.
- Follow the requirements in the national or international regulations for the transport of dangerous goods (infectious substances) as applicable (14).
- Deliver all specimens by hand whenever possible. Do not use pneumatic-tube systems to transport specimens.
- State the full name, date of birth of the suspected SARI case clearly on the accompanying request form. Notify the laboratory as soon as possible that the specimen is being transported.
Assure good communication with the laboratory and provide needed information

To assure proper and fast processing of samples and to assure adequate biosafety measures in the laboratory, communication and information sharing is essential. Be sure you have alerted the laboratory of the urgency and situation before sending the sample. Also assure that specimens are correctly labelled, and diagnostic request forms are filled out properly and clinical information is provided (see box information to be recorded).

Information to be recorded:
- Patient information – name, date of birth, sex and residential address, unique identification number, other useful information (e.g. patient hospital number, surveillance identification number, name of hospital, hospital address, room number, physicians’ name and contact information, name and address for report recipient),
- Date and time of sample collection,
- Anatomical site and location of specimen collection,
- Tests requested,
- Clinical symptoms and relevant patient history (including vaccination and antimicrobial therapies received, epidemiological information, risk factors).

Table 1. Specimens to be collected from symptomatic patients and asymptomatic contacts

Guidance on specimen collection (adapted from reference 5)

| Specimen type                                      | Collection materials                                                                 | Transport to laboratory | Storage till testing | Comment                                                                 |
|----------------------------------------------------|--------------------------------------------------------------------------------——|------------------------|----------------------|------------------------------------------------------------------------|
| Nasopharyngeal and oropharyngeal swab              | Dacron or polyester flocked swabs*                                               | 4 °C                   | ≤5 days: 4 °C        | The nasopharyngeal and oropharyngeal swabs should be placed in the same tube to increase the viral load. |
| Bronchoalveolar lavage                             | sterile container                                                                | 4 °C                   | ≤48 hours: 4 °C      | There may be some dilution of pathogen, but still a worthwhile specimen |
| Tracheal aspirate, nasopharyngeal aspirate or nasal wash | sterile container                                                                | 4 °C                   | ≤48 hours: 4 °C      |                                                                          |
| Sputum                                              | sterile container                                                                | 4 °C                   | ≤48 hours: 4 °C      | Ensure the material is from the lower respiratory tract                |
| Tissue from biopsy or autopsy including from lung   | sterile container with saline                                                     | 4 °C                   | ≤24 hours: 4 °C      |                                                                          |
| Serum (2 samples acute and convalescent possibly 2-4 weeks after acute phase) | Serum separator tubes (adults: collect 3-5 ml whole blood)                      | 4 °C                   | ≤5 days: 4 °C        | Collect paired samples:
  * acute – first week of illness
  * convalescent – 2 to 3 weeks later                |
| Whole blood                                         | collection tube                                                                  | 4 °C                   | ≤5 days: 4 °C        | For antigen detection particularly in the first week of illness        |
| Urine                                               | urine collection container                                                        | 4 °C                   | ≤5 days: 4 °C        |                                                                          |

*For transport of samples for viral detection, use VTM (viral transport medium) containing antifungal and antibiotic supplements. For bacterial or fungal culture, transport dry or in a very small amount of sterile water. Avoid repeated freezing and thawing of specimens.

Aside from specific collection materials indicated in the table also assure other materials and equipment are available: e.g. transport containers and specimen collection bags and packaging, coolers and cold packs or dry ice, sterile blood-drawing equipment (e.g. needles, syringes and tubes), labels and permanent markers, PPE, materials for decontamination of surfaces.
4. Effective usage of Global Laboratory Networking

Timely and accurate laboratory testing of specimens from cases under investigation is an essential part of the management of emerging infections. All countries should have access to reliable testing, either nationally or internationally, in laboratories willing to perform primary detection or confirmatory testing, and novel pathogen detection. WHO can assist Member States to access testing internationally should the need arise.

5. Testing in reference laboratories

Microscopy

Light and electron microscopy can rapidly provide the first information on the potential causative agent in clinical materials. However subsequent testing is needed to identify the pathogen.

Culture

Viral culture is often considered the “gold standard” for laboratory diagnosis of viral respiratory infections. Laboratories with the appropriate experience and containment facilities, may attempt to isolate the virus. These recommendations do not cover virus isolation procedures. Culture of virus has important biosafety implications, depending on the type of virus, its pathogenicity and mechanism of spread.

Molecular identification and characterization of a novel pathogen

A number of methods and systems for rapid and sensitive identification of the genetic sequence of novel pathogens have been developed and refined. Sharing such gene sequence information among collaborators is essential to rapidly identify the pathogen and to develop pathogen-specific diagnostics.

In addition to identifying the novel pathogen, sequence data can also provide valuable information for understanding the origin of the virus and how it is spreading. WHO has published a Draft code of conduct for the handling of Genetic Sequence Data related to outbreaks (see https://www.who.int/blueprint/what/norms-standards/GSDDraftCodeConduct_forpublicconsultation-v1.pdf?ua=1). That policy framework recommends making sequence data publicly available. Different models for sharing of pathogen sequences exist, open (e.g. GenBank, virological.org) or semi-open (e.g. GISAID) platforms. Laboratories are encouraged to share sequence data with WHO and the scientific community to assist in the rapid development and distribution of diagnostic assays in at risk countries. Leading medical journals now have regulations discouraging publication of articles on outbreak pathogens when the authors did not expedite the release of sequence information into the public sector. WHO can assist Member States to identify laboratories able to provide support and advise them on the management of sequence data related to an outbreak.

Serological testing

Serological testing may be useful to confirm immunologic response to a pathogen from a specific viral group, e.g. coronaviruses. Best results from serologic testing requires the collection of paired serum samples (in the acute and convalescent phase) from cases under investigation.

In the absence of shared sequence information from the putative pathogen from the Wuhan outbreak, laboratories may desire to use a pan-coronavirus assay for amplification followed by sequencing of the amplicon for characterization and confirmation. External confirmation should be sought from a reference laboratory that can deploy additional assays. It is important to consider that four human coronaviruses (HCoVs) are endemic globally: HCoV-229E, HCoV-NL63, HCoV-HKU1 as well as HCoV-OC43. The latter two are betacoronaviruses. Two other betacoronaviruses that cause zoonotic infection in humans are MERS-CoV, acquired by contact with dromedary camels and SARS arising from civets and cave-dwelling horseshoe bats.

Once genome sequences of the novel coronavirus have been released and specific NAAT assays developed, confirmation of cases of the novel virus infection will be based on specific detection of unique sequences of viral nucleic acid by reverse-transcriptase polymerase chain reaction (RT-PCR) with probe detection or sequencing. Alternative NAAT techniques with advantages of speed or simplicity of use may also become available.

Specifications for biosafety practices in the laboratory

Ensure that health laboratories adhere to appropriate biosafety practices. Any testing on clinical specimens from patient meeting the case definition should be performed in appropriately equipped laboratories by staff trained in the relevant technical and safety procedures. National guidelines on the laboratory biosafety should be followed in all circumstances. General information on laboratory biosafety guidelines, see the WHO Laboratory Biosafety Manual, 3rd edition (8).

It is recommended that all manipulations in laboratory settings of samples originating from suspected or confirmed cases of novel coronaviruses can be conducted according to WHO recommendations available at: https://www.who.int/csr/disease/coronavirus_infections/Biosafety_InterimRecommendations_NovelCoronavirus2017_31Oct17.pdf?ua=1 Information on biosafety levers for SARS, a Betacoronavirus that can cause severe respiratory disease can be consulted at https://www.who.int/csr/sars/hinsafety2003_04_25/en/ and other guidance.
Table 1. Tests to be performed in expert laboratories for patients meeting the case definition

<table>
<thead>
<tr>
<th>Test</th>
<th>Type of sample</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole genome sequencing</td>
<td>Lower respiratory tract</td>
<td>Collect on presentation, done by an expert laboratory.</td>
</tr>
<tr>
<td></td>
<td>- sputum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- aspirate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- lavage</td>
<td></td>
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<tr>
<td></td>
<td>Upper respiratory tract</td>
<td></td>
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<tr>
<td></td>
<td>- naso pharyngeal and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- oro pharyngeal swabs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- naso pharyngeal wash/naso</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- pharyngeal aspirate</td>
<td></td>
</tr>
<tr>
<td>NAAT when it becomes available</td>
<td>Lower respiratory tract</td>
<td>Collect on presentation.</td>
</tr>
<tr>
<td>Note: In laboratories that have validated broad range coronavirus RT-PCR available, this might be considered, however at this date insufficient information is available to guarantee proper detection, thus multiple broad range coronavirus assays should be used and amplicon sequencing should always be part of the algorithm.</td>
<td>To confirm clearance of the virus, sample collection to be repeated until the results are negative on 2 sequential samples.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper respiratory tract</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- naso pharyngeal and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- oro pharyngeal swabs</td>
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<tr>
<td></td>
<td>- naso pharyngeal wash/naso</td>
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<tr>
<td></td>
<td>- pharyngeal aspirate</td>
<td></td>
</tr>
</tbody>
</table>

Serology, broad corona virus serology on paired samples if available

Serum for serological testing if NAAT is not available

Paired samples are necessary for confirmation with the initial sample collected in the first week of illness and the second ideally collected 3-4 weeks later. If only a single serum sample can be collected, this should occur at least 3-4 weeks after onset of symptoms for determination of a probable case.

---

Packaging and shipment to another laboratory

Transport of specimens within national borders should comply with applicable national regulations. International Transport Regulations. Novel coronavirus specimens should follow the UN Model Regulations, and any other applicable regulations depending on the mode of transport being used. More information may be found in the WHO Guidance on regulations for the Transport of Infectious Substances 2019-2020 (Applicable as from 1 January 2019) (14). A summary on transport of infectious substances can also be found in Toolbox 4 of the Managing epidemics handbook (1).

Patient specimens from suspected or confirmed cases should be transported as UN3373, “Biological Substance, Category B”, when they are transported for diagnostic or investigational purposes. Viral cultures or isolates should be transported as Category A, UN2814, “infectious substance, affecting humans”. All specimens being transported (whether UN3373 or UN2814) should have appropriate packaging, labelling and documentation, as described above.

6. Reporting of cases and test results

Laboratories should follow national reporting requirements, but in general, suspected cases should be reported to relevant public health authorities as soon as the laboratory receives a specimen, even before any testing is performed. All test results, whether positive or negative, should likewise be immediately reported to national authorities. If the infection becomes widespread, laboratories should notify public health authorities immediately of each new confirmed case or positive screening test if there will be a delay in confirmatory testing. Laboratories should also periodically report the number of negative test results to public health.

States Parties to the IHR are reminded of their obligations to share with WHO relevant public health information for events for which they notified WHO, using the decision instrument in Annex 1 of the IHR (2005) (18).

Detection of a possible human case of emerging pathogen causing severe acute respiratory disease should immediately
be notified to local, subnational and national public health authorities. This will allow these authorities to make immediate decisions about launching the investigation and the extent of response measures. Detection of such a case should be used to trigger notification of traditional and non-traditional health providers, hospitals and outpatient facilities. Community leaders in the area where the case patients lived or travelled, as part of active case-finding efforts. In line with the International Health Regulations (IHR) (2005), the national health authority must notify WHO within 24 hours of all events that may constitute a public health emergency of international concern according to defined criteria. The IHR decision instrument should be used to determine whether an event is to be notified to WHO. Further guidance on the use of the IHR decision instrument, including examples of its application, is available. The national animal health authority must notify OIE of certain animal diseases detected on its territory. OIE focal points should be contacted for further details.

7. Acknowledgements
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Christian Drosten, Charité - Universitätsmedizin Berlin, Germany
Marion Koopmans, Erasmus MC, Rotterdam, The Netherlands
David Alland, Rutgers Medical School, USA


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4) Surveillance for human infection with Middle East respiratory syndrome coronavirus (MERS-CoV), interim guidance, Updated June 2018, WHO/OMSR/SUR/15.1 Revision 1 (https://apps.who.int/iris/bitstream/handle/10665/177869/WHO_MERS_SUR_15.1_eng.pdf?sequence=1)


15) World Health Organization. (2019). Infection prevention and control during health care for probable or confirmed cases of Middle East


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**Prevention & Control**

The mode(s) of transmission of the nCoV are currently unknown. Available information suggests that the nCoV is zoonotic and causes infections in humans through contact with infected animals (to be confirmed). Current data suggest that there is no or limited human-to-human transmission. For other coronaviruses such as MERS-CoV and SARS-CoV, human-to-human transmission occurred due to breaches in IPC practices. Thus, the central focus of any prevention/control strategy is protecting healthcare workers with appropriate IPC supplies and ensuring basic health logistics at responding facilities.

Respiratory (standard, droplet IPC); Airborne precautions for aerosolized generating procedures; Personal Protective Equipment (PPE) for screening; Use of PPE for at-risk health facilities.

**Case Management**

There is no specific treatment or vaccines for the nCoV; however, there are ongoing R&D efforts for MERS-CoV. See WHO current guidance on case management for MERS-CoV. Guidance on case management for the nCoV from Wuhan is in development.

- Supportive treatment (oxygen, antibiotics, hydration & fever/pain relief) to reduce mortality
- Personal Protective Equipment and material for the establishment of IPC measures at health care level to reduce transmission

**Intervention**

- **MERS-CoV**: Consideration for material supply

**Guidance on regulations for Transport of Infectious Substances 2017-2018**

**Technical Description**

- EU standard directive 93/42/EEC Class I, EN 455.
- ANSI/ISEA 105-2011.
- ASTM F084-10.
- EN 14983 Type IIR performance ASTM F2100 level 3 or equivalent.
- Fluid resistance at minimum 120 mmHg pressure based on ASTM F1862-07.
- Breathability: MIL-M-33485C, EN 14683 annex C, or equivalent.
- Filtration efficiency: ASTM F2101, EN14683 annex B, or equivalent.

**Samples & Culture**

- Upper and lower respiratory samples (nasopharyngeal and sputum samples).
- Polymerase Chain Reaction (PCR)
- Culture

- No commercial rRT-PCR kits yet available; see interim nCoV laboratory guidance
- Not yet available
- Viral transport medium
### Novel Coronavirus (nCoV) v1

#### Operational Support 3: Logistics Disease Commodity Packages

**Gown**
- Single use, fluid resistant, disposable, length mid calf to cover top of the boots. Tight cuffs preferable to better detect possible contamination, thumb or zipper loops or elastic cuff to anchor sleeves in place.
- Option 1: Fluid penetration resistant: EN 13795 high performance, or AAMI P870 level 3 performance or above, or equivalent
- Option 2: Blood borne pathogens penetration resistant: AAMI P870 level 4 performance, or (EN 14126-0) and partial body protection (EN 13304 or EN 14605), or equivalent

**Oxygen concentrators**
- Device concentrates oxygen from ambient air. On 4 antistatic swivel casters, 2 with brakes. Integrated handle allows for easy moving and positioning. Oxygen sensing device is integrated and measures concentration at flow meter entrance. Four-step filtering of air-intake, including bacterial filter. All filters replaceable, coarse filter washable/reusable. Continuous monitoring with visual and audible alerts. on low high output pressure, low oxygen concentration, power failure and battery test. Operating conditions. Temperature between 5 to 45 degrees Celsius, Relative humidity max. 60% without condensation. Spare parts should be required for operating at least one year.

**Flow splitter**
- Splitter of oxygen flow provided by an oxygen concentrator. Each flow can be adjusted individually via its flow meter, range: 0.125 to 2LPM (Liter Per Minute). The output nozzle can either be fit with tubing or left blank. Input pressure: 50 to 350PA.

**Oxygen prongs, nasal, non sterile, single use**
- Nasal prongs (nasal cannule) is a device designed for easy administration of oxygen and comfort of patient. The device consists of a plastic tube which fits behind the ears, and a set of two prongs which are placed in the nostrils. Soft twin prongs nasal lips to ensure equal oxygen flow to both. Use oxygen main tube to avoid accidental blockage. Adjustable, smoothly finished, nasal tips for maximum patient comfort. Soft funnel shaped connector to facilitate easy connection to oxygen source. Oxygen tube length: approximately 2m.

**Oxygen tube, extension**
- Tube used to deliver oxygen through the nose. Material: PVC. Automatic, open distal (patient) end, with 6 to 12 lateral eyes. Proximal end with connector enabling the tube to be connected to an oxygen supply line of any diameter (e.g. serrated male conical tip). Sterile, for single patient use. Diameter: CH 10. Length: 40cm

#### Supportive Treatment

**Portable ventilator**
- a) Tidal volume up to 1,000 ml
- b) Pressure (inspiratory) up to 80 cm H20
- c) Minutevolume inspiratory up to 100 U/min
- d) Respiratory rate up to 60 breaths per minute.
- e) SIMV: Respiration Rate: up to 40 breaths per minute.
- f) CPAP/PEEP up to 20 cm H20.
- g) Pressure support up to 45 cm H20.
- h) FIO2 between 21 to 100 %.
- i) Inspiratory and expiratory times up to at least 2 sec and 8 sec respectively.
- 2 Modes of ventilation:
  - a) Volume controlled,
  - b) Pressure controlled,
  - c) Pressure support,
  - d) Synchronized intermittent mandatory ventilation (SIMV) with pressure support.
  - e) Assist / control mode
  - f) CPAP/PEEP
  - Alarms required: FIO2, minute volume, pressure, PEEP, apnea, occlusion, high respiration rate, disconnection.
  - System alarms required: power failure, gas disconnection, low battery, vent inoperative, self diagnosis.
  - If alarm silencing feature is incorporated, it must be temporary and clearly displayed when activated.
  - Air and externally supplied oxygen mixture ratio fully controllable.
  - Inlet gas supply (O2) pressure range at least 35 to 85 psi.
  - Medical air compressor integral to unit, with inbuilt filter.

**Pulse Oximeter**
- Compact portable device measures arterial blood oxygen saturation (SpO2), heart rate and signal strength. Measuring range: SpO2 30 to 100% (minimum graduation 1%).
- Heart rate: 20 to 250 bpm (minimum graduation 10pm).
- Line-powered, or Extra-batteries/rechargeable batteries are required at least one year.

**Antibiotics**
- According to national guidelines and clinical presentation

**Compound Sodium Lactate Solution**
- Compound solution of sodium lactate (Ringer's lactate), injection solution, w/o IV set and needle, 1000ml

**Infusion giving set**
- Infusion giving set, with air-inlet and needle, sterile, single-use

**Paracetamol**
- Paracetamol, 500mg, tablets

**Gloves, examination**
- Gloves, examination, nitrile, powder-free, non-sterile. Cuff length preferably reach mid forearm (eg. minimum 280mm total length. Sizes: S, M, L.
- Outer glove should have long cuffs, reaching well above the wrist, ideally to mid forearm.
- EU standard directive 93/42/EEC Class I, EN 455.
- ASTM D3019-10
- or equivalent

**Gloves, surgical, length to forearm large (longer than examination gloves)**
- Gloves, surgical, nitrile, powder-free, single use.
- Gloves should have long cuffs, reaching well above the wrist, ideally to mid forearm.
- EU standard directive 93/42/EEC Class I, EN 455.
- ANSI/ISEA 105-2011.
- ASTM D3019-10
- or equivalent
<table>
<thead>
<tr>
<th>PPE for Health Care Facilities</th>
<th>Novel Coronavirus (nCoV) v1</th>
<th>Operational Support &amp; Logistics</th>
<th>Disease Commodity Packages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Face shield</strong></td>
<td>Made of clear plastic and provides good visibility to both the wearer and the patient. Adjustable band to attach firmly around the head and fit snugly against the forehead. Fog resistant (preferable). Completely cover the sides and length of the face. May be re-usable (made of robust material which can be cleaned and disinfected) or disposable.</td>
<td>$EU standard directive 89/686/EEC, EN 166/2002, ANSI/ISEA 287.1-2010, or equivalent</td>
<td></td>
</tr>
<tr>
<td><strong>Fit Test Kit</strong></td>
<td>To evaluate effectiveness of seal for tight fitting respiratory protection devices</td>
<td>OSHA 29 CFR 1910.134 Appendix A</td>
<td></td>
</tr>
<tr>
<td><strong>Face mask, particulate respirator, grade N95 or higher</strong></td>
<td>Fluid resistant particulate respirator. Surgical N95 respirator or higher. High fluid resistance. Good breathability. Internal and external faces should be clearly identified. Structured design that does not collapse against the mouth (e.g. duckbill, cup-shaped)</td>
<td>&quot;Surgical N95 respirator&quot; deemed by the US FDA and NIOSH, or equivalent</td>
<td></td>
</tr>
<tr>
<td><strong>Mask, surgical</strong></td>
<td>Medical/surgical mask. High fluid resistance, good breathability. Internal and external faces should be clearly identified, structured design that does not collapse against the mouth (e.g. duckbill, cup-shaped)</td>
<td>EN 14683 Type IIIR performance ASTM F2100 level 2 or level 3 or equivalent; Fluid resistance at minimum 120 mmHg pressure based on ASTM F1682, ISO 22609, or equivalent</td>
<td></td>
</tr>
<tr>
<td><strong>Scrub's, tops</strong></td>
<td>Tunic tops, woven, scrubs, reusable or single use, short sleeved (tunic tops), worn underneath the coveralls or gown.</td>
<td></td>
<td></td>
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<tr>
<td><strong>Scrub's, pants</strong></td>
<td>Trouser/pants, woven, scrub's, reusable or single use, short sleeved (tunic tops), worn underneath the coveralls or gown</td>
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</tr>
<tr>
<td><strong>Gown</strong></td>
<td>Single use, fluid resistant, disposable, length mid-calf to cover the top of the boots, light colours preferable to better detect possible contamination, thumb/finger loops or elastic cuff to anchor sleeves in place.</td>
<td>- Option 1: fluid penetration resistant: EN 13779 high performance, or AAMI PB70 level 3 performance or above, or equivalent - Option 2: blood borne pathogens penetration resistant: AAMI PB70 level 4 performance, or (EN 14126-B) and partial body protection (EN 13034 or EN 14605), or equivalent</td>
<td></td>
</tr>
<tr>
<td><strong>Goggles, protective</strong></td>
<td>Good seal with the skin of the face. Flexible PVC frame to easily fit with all face contours with even pressure. Enclose eyes and the surrounding areas. Accommodate wearers with prescription glasses. Clear plastic lens with fog and scratch resistant treatments. Adjustable band to secure firmly so as not to become loose during clinical activity. Indirect venting to avoid fogging. May be re-usable (provided appropriate arrangements for decontamination are in place) or disposable.</td>
<td>- EU standard directive 89/686/EEC, EN 166/2002, ANSI/ISEA 287.1-2010, or equivalent</td>
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<tr>
<td><strong>Alcohol-based hand rub</strong></td>
<td>Bottle of 100ml</td>
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<tr>
<td><strong>Bio-hazardous bag</strong></td>
<td>Disposal bag for bio-hazardous waste, 30x50cm, with &quot;Bio-Hazard&quot; print, autodegradable polypropylene. 50 or 70 micron thickness</td>
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<tr>
<td><strong>Body bag</strong></td>
<td>Made of linear reinforced, U-shaped zipper and 2 zipper pulls with tie ribs. adult size 250x120cm. Protector Body Bag specifications: - 8 handles - Impermeable, linear reinforced LDPE, LDPE, EVA, PEVA (avoid PVC), minimum thickness 400 micromicrons. - Should be able to hold 100-125 liters (200-250 lbs). - Should contain no chlorides: burning of chlorides pollute the environment and can cause damage to retort chambers. Body bags should be non cardiological to health of funeral workers when used for cremations. - At least 6 handles included in the body bag to allow burial team to hand carry it safely. - Heat-sealed: insure superior strength and safety. - Provide full containment of blood borne pathogens - Cracking point of 25 - 32 degrees below zero - Shelf life: minimum 10 years - Bag and handles should be white color.</td>
<td></td>
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<tr>
<td><strong>Chlorine</strong></td>
<td>NaOCl, granules, 1kg. 65 to 70% + dosage spoon</td>
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</tbody>
</table>
Surveillance case definitions for human infection with novel coronavirus (nCoV)
Interim guidance v1
January 2020
WHO/2019-nCoV/Surveillance/v2020.1

This document summarizes WHO recommendations for surveillance of the novel coronavirus (nCoV) recently identified in Wuhan, China. WHO will update these recommendations as new information becomes available on the situation in Wuhan, China. This interim guidance was adapted from WHO’s guidance materials published for Middle East Respiratory coronavirus (MERS-CoV) and will be updated regularly.

Surveillance

Objectives of surveillance

The primary objectives of surveillance are to:
1. Detect confirmed cases/clusters of nCoV infection and any evidence of amplified or sustained human-to-human transmission;
2. Determine risk factors and the geographic risk area for infection with the virus.

Additional clinical and epidemiological investigations are needed to:
1. Determine key clinical characteristics of the illness, such as incubation period, spectrum of disease, and the clinical course of the disease.
2. Determine key epidemiological characteristics of nCoV infection, such as exposures that result in infection, risk factors, secondary attack rates, and modes of transmission.

The following people should be investigated and tested for nCoV infection

Case definitions for surveillance

1. A person with SARI, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation1 (clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised);

AND any of the following:

a. A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset.
b. The disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel;
c. The person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation.

2. Individuals with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures:
   a. Close physical contact2 with a confirmed case of nCoV infection, while that patient was symptomatic;
   b. A healthcare facility in a country where hospital-associated nCoV infections have been reported;
   c. Direct contact with animals (if animal source is identified) in countries where the nCoV is known to be circulating in animal populations or where human infections have occurred as a result of presumed zoonotic transmission.3

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1 Testing should be according to local guidance for management of community-acquired pneumonia. Examples of other aetiologies include Streptococcus pneumoniae, Haemophilus influenzae type B, Legionella pneumophila, other recognized primary bacterial pneumonias, influenza, and respiratory syncytial virus.
2 Close contact is defined as:
   - Health care associated exposure, including providing direct care for nCoV patients, working with health care workers infected with nCoV,
   - Visiting patients or staying in the same close environment of a nCoV patient.
   - Working together in close proximity or sharing the same classroom environment with a nCoV patient
   - Traveling together with nCoV patient in any kind of conveyance
   - Living in the same household as a nCoV patient

The epidemiological link may have occurred within a 14-day period before or after the onset of illness in the case under consideration.
3 To be added once an animal source is identified as a source of infection
Guidelines on Clinical management of severe acute respiratory illness (SARI) in suspect/confirmed novel coronavirus (nCoV) cases

An infection with a novel coronavirus has been reported from China. As 25th January 2020, a total of 1287 cases and 41 deaths were reported in 29 provinces (districts and cities) of China. In addition, 28 cases have been confirmed outside Chinese mainland: 5 cases in Hong Kong, 2 cases in Macao, 3 cases in Taiwan, 4 cases in Thailand (2 cases cured), 2 cases in Japan (1 case cured), 2 cases in South Korea, 2 cases in the United States, 2 cases in Vietnam, 3 cases in Singapore, 1 case in Nepal and 2 cases in France.

Purpose and scope of document

This document is intended for clinicians taking care of hospitalised adult and paediatric patients with severe acute respiratory infection (SARI) when an nCoV infection is suspected. It is not meant to replace clinical judgment or specialist consultation but rather to strengthen clinical management of these patients and provide to up-to-date guidance. Best practices for SARI including IPC and optimized supportive care for severely ill patients are essential.

This document aims to provide clinicians with updated interim guidance on timely, effective, and safe supportive management of patients with nCoV and SARI, particularly those with critical illness. The recommendations in this document are derived from WHO publications.

A. Triage: Early recognition of patients with SARI associated with nCoV infection.

The purpose of triage is to recognize and sort all patients with SARI at first point of contact with health care system (such as the emergency department). Consider nCoV as a possible etiology of SARI under certain conditions (see Table 1). Triage patients and start emergency treatments based based on disease severity.

Table 1: Definitions of patients with SARI, suspected of nCoV*

<table>
<thead>
<tr>
<th>SARI</th>
<th>An ARI with history of fever or measured temperature ≥38 C° and cough; onset within the last ~10 days; and requiring hospitalization. However, the absence of fever does NOT exclude viral infection.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveillance case definitions for nCoV*</td>
<td>1. Severe acute respiratory infection (SARI) in a person, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation¹ (clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised);</td>
</tr>
<tr>
<td></td>
<td>AND any of the following:</td>
</tr>
<tr>
<td></td>
<td>a) A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset; or</td>
</tr>
<tr>
<td></td>
<td>b) the disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel; or</td>
</tr>
</tbody>
</table>
2. A person with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures:

   a) close physical contact with a confirmed case of nCoV infection, while that patient was symptomatic; or

   b) a healthcare facility in a country where hospital-associated nCoV infections have been reported;

*see https://mohfw.gov.in/media/disease-alerts for latest case definition

1- Testing should be according to local guidance for management of community-acquired pneumonia. Examples of other etiologies include Streptococcus pneumoniae, Haemophilus influenzae type B, Legionella pneumophila, other recognized primary bacterial pneumonias, influenza viruses, and respiratory syncytial virus.

2: Close contact is defined as:

- Health care associated exposure, including providing direct care for nCoV patients, working with health care workers infected with nCoV, visiting patients or staying in the same close environment of a nCoV patient
- Working together in close proximity or sharing the same classroom environment with a with nCoV patient
- Traveling together with nCoV patient in any kind of conveyance
- Living in the same household as a nCoV patient

The epidemiological link may have occurred within a 14-day period before or after the onset of illness in the case under consideration

Novel Coronavirus may present with mild, moderate, or severe illness; the latter includes severe pneumonia, ARDS, sepsis and septic shock. Early recognition of suspected patients allows for timely initiation of IPC (see Table 2). Early identification of those with severe manifestations (see Table 2) allows for immediate optimized supportive care treatments and safe, rapid admission (or referral) to intensive care unit according to institutional or national protocols. For those with mild illness, hospitalization may not be required unless there is concern for rapid deterioration. All patients discharged home should be instructed to return to hospital if they develop any worsening of illness.

Table 2: Clinical syndromes associated with nCoV infection

<table>
<thead>
<tr>
<th>Uncomplicated illness</th>
<th>Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache, muscle pain or malaise. The elderly and immunosuppressed may present with atypical symptoms. These patients do not have any signs of dehydration, sepsis or shortness of breath</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild pneumonia</td>
<td>Patient with pneumonia and no signs of severe pneumonia.</td>
</tr>
</tbody>
</table>
| **Severe pneumonia** | Adolescents or adults: fever or suspected respiratory infection, plus one of respiratory rate >30 breaths/min, severe respiratory distress, or SpO2 <90% on room air.  
Child with cough or difficulty in breathing, plus at least one of the following: central cyanosis or SpO2 <90%; severe respiratory distress (e.g. grunting, very severe chest indrawing); signs of pneumonia with a general danger sign: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions. Other signs of pneumonia may be present: chest indrawing, fast breathing (in breaths/min): <2 months, ≥60; 2–11 months, ≥50; 1–5 years, ≥40. The diagnosis is clinical; chest imaging can exclude complications. |
| **Acute Respiratory Distress Syndrome** | **Onset:** new or worsening respiratory symptoms within one week of known clinical insult.  
**Chest imaging (radiograph, CT scan, or lung ultrasound):** bilateral opacities, not fully explained by effusions, lobar or lung collapse, or nodules.  
**Origin of oedema:** respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of oedema if no risk factor present.  
**Oxygenation (adults):**  
- Mild ARDS: 200 mmHg < PaO2/FiO2 ≤ 300 mmHg (with PEEP or CPAP ≥5 cm H2O, or non-ventilated)  
- Moderate ARDS: 100 mmHg < PaO2/FiO2 ≤200 mmHg with PEEP ≥5 cm H2O, or non-ventilated)  
- Severe ARDS: PaO2/FiO2 ≤ 100 mmHg with PEEP ≥5 cmH2O, or non-ventilated)  
- When PaO2 is not available, SpO2/FiO2 ≤315 suggests ARDS (including in non-ventilated patients)  
**Oxygenation (children; note OI = Oxygenation Index and OSI = Oxygenation Index using SpO2)**  
- Bilevel NIV or CPAP ≥5 cmH2O via full face mask: PaO2/FiO2 ≤ 300 mmHg or SpO2/FiO2 ≤264  
- Mild ARDS (invasively ventilated): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5  
- Moderate ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3  
- Severe ARDS (invasively ventilated): OI ≥ 16 or OSI ≥ 12.3 |
**Sepsis**

**Adults:** life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection, with organ dysfunction. Signs of organ dysfunction include: altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or low blood pressure, skin mottling, or laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate or hyperbilirubinemia.

**Children:** suspected or proven infection and ≥2 SIRS criteria, of which one must be abnormal temperature or white blood cell count.

**Septic shock**

**Adults:** persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP ≥65 mmHg and serum lactate level >2 mmol/L

**Children:** any hypotension (SBP <5th centile or >2 SD below normal for age) or 2-3 of the following: altered mental state; tachycardia or bradycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children); prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia

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**B. Immediate implementation of appropriate IPC measures**

IPC is a critical and integral part of clinical management of patients and should be initiated at the point of entry of the patient to hospital (typically the Emergency Department). Standard precautions should always be routinely applied in all areas of health care facilities. 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. Standard precautions also include prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.

**Table 3: How to implement infection prevention and control measures for patients with suspected or confirmed nCoV infection**

<table>
<thead>
<tr>
<th>At triage</th>
<th>• Give suspect patient a medical mask and direct patient to separate area, an isolation room if available. Keep at least 1 meter distance between suspected patients and other patients. Instruct all patients to cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others. Perform hand hygiene after contact with respiratory secretions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply droplet precautions</td>
<td>• Droplet precautions prevent large droplet transmission of respiratory viruses. Use a medical mask if working within 1-2 metres of the patient. Place patients in single rooms, or group together those with the same etiological diagnosis. If an etiological diagnosis is not</td>
</tr>
</tbody>
</table>
possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation. When providing care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection (face-mask or goggles), because sprays of secretions may occur. Limit patient movement within the institution and ensure that patients wear medical masks when outside their rooms.

| Apply contact precautions | • Droplet and contact precautions prevent direct or indirect transmission from contact with contaminated surfaces or equipment (i.e. contact with contaminated oxygen tubing/interfaces). Use PPE (medical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving. If possible, use either disposable 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. Ensure that health care workers refrain from touching their eyes, nose, and mouth with potentially contaminated gloved or ungloved hands. Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation. Avoid movement of patients or transport. Perform hand hygiene |

| Apply airborne precautions when performing an aerosol generating procedure | • Ensure that healthcare workers performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) use PPE, including gloves, long-sleeved gowns, eye protection, and fit-tested particulate respirators (N95 or equivalent, or higher level of protection). (The scheduled fit test should not be confused with user seal check before each use.) Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures, meaning negative pressure rooms with minimum of 12 air changes per hour or at least 160 litres/second/patient in facilities with natural ventilation. Avoid the presence of unnecessary individuals in the room. Care for the patient in the same type of room after mechanical ventilation commences |

Abbreviations: ARI, acute respiratory infection; PPE, personal protective equipment

C. Early supportive therapy and monitoring

a. Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia, or shock: Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target SpO₂ ≥90% in non-pregnant adults and SpO₂ ≥92-95 % in pregnant patients. Children with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive oxygen therapy during resuscitation to target SpO₂ ≥94%; otherwise, the target SpO₂ is ≥90%. All areas where patients with SARI are cared for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering
interfaces (nasal cannula, simple face mask, and mask with reservoir bag). Use contact precautions when handling contaminated oxygen interfaces of patients with nCoV infection.

b. Use conservative fluid management in patients with SARI when there is no evidence of shock: Patients with SARI should be treated cautiously with intravenous fluids, because aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation.

c. Give empiric antimicrobials to treat all likely pathogens causing SARI. Give antimicrobials within one hour of initial patient assessment for patients with sepsis: Although the patient may be suspected to have nCoV, administer appropriate empiric antimicrobials within ONE hour of identification of sepsis. Empiric antibiotic treatment should be based on the clinical diagnosis (community-acquired pneumonia, health care-associated pneumonia [if infection was acquired in healthcare setting], or sepsis), local epidemiology and susceptibility data, and treatment guidelines. Empiric therapy includes a neuraminidase inhibitor for treatment of influenza when there is local circulation or other risk factors, including travel history or exposure to animal influenza viruses.18 Empiric therapy should be de-escalated on the basis of microbiology results and clinical judgment.

d. Do not routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS outside of clinical trials unless they are indicated for another reason: A systematic review of observational studies of corticosteroids administered to patients with SARS reported no survival benefit and possible harms (avascular necrosis, psychosis, diabetes, and delayed viral clearance). A systematic review of observational studies in influenza found a higher risk of mortality and secondary infections with corticosteroids; the evidence was judged as very low to low quality due to confounding by indication. A subsequent study that addressed this limitation by adjusting for time-varying confounders found no effect on mortality. Finally, a recent study of patients receiving corticosteroids for MERS used a similar statistical approach and found no effect of corticosteroids on mortality but delayed lower respiratory tract (LRT) clearance of MERS-CoV. Given lack of effectiveness and possible harm, routine corticosteroids should be avoided unless they are indicated for another reason. See section F for the use of corticosteroids in sepsis.

e. Closely monitor patients with SARI for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately: Application of timely, effective, and safe supportive therapies is the cornerstone of therapy for patients that develop severe manifestations of nCoV.

f. Understand the patient’s co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis: During intensive care management of SARI, determine which chronic therapies should be continued and which therapies should be stopped temporarily.

g. Communicate early with patient and family: Communicate proactively with patients and families and provide support and prognostic information. Understand the patient’s values and preferences regarding life-sustaining interventions.

D. Collection of specimens for laboratory diagnosis

Guidance on specimen collection, processing, transportation, including related biosafety
procedures, is available on https://mohfw.gov.in/media/disease-alerts

Points to remember

- Collect blood cultures for bacteria that cause pneumonia and sepsis, ideally before antimicrobial therapy. DO NOT delay antimicrobial therapy to collect blood cultures.
- Collect specimens from BOTH the upper respiratory tract (URT; nasopharyngeal and oropharyngeal) AND lower respiratory tract (LRT; expectorated sputum, endotracheal aspirate, or bronchoalveolar lavage) for nCoV testing by RT-PCR. Clinicians may elect to collect only LRT samples when these are readily available (for example, in mechanically ventilated patients).

- Use appropriate PPE for specimen collection (droplet and contact precautions for URT specimens; airborne precautions for LRT specimens). When collecting URT samples, use viral swabs (sterile Dacron or rayon, not cotton) and viral transport media. Do not sample the nostrils or tonsils. In a patient with suspected novel coronavirus, especially with pneumonia or severe illness, a single URT sample does not exclude the diagnosis, and additional URT and LRT samples are recommended. LRT (vs. URT) samples are more likely to be positive and for a longer period. Clinicians may elect to collect only LRT samples when these are readily available (for example, in mechanically ventilated patients). Sputum induction should be avoided due to increased risk of increasing aerosol transmission.

Dual infections with other respiratory viral infections have been found in SARS and MERS cases. At this stage we need detailed microbiologic studies in all suspected cases. Both URT and LRT specimens can tested for other respiratory viruses, such as influenza A and B (including zoonotic influenza A), respiratory syncytial virus, parainfluenza viruses, rhinoviruses; adenoviruses, enteroviruses (e.g. EVD68), human metapneumovirus, and endemic human coronaviruses (i.e. HKU1, OC43, NL63, and 229E). LRT specimens can also be tested for bacterial pathogens, including Legionella pneumophila.

In hospitalized patients with confirmed nCoV infection, repeat URT and LRT samples should be collected to demonstrate viral clearance. The frequency of specimen collection will depend on local circumstances but should be at least every 2 to 4 days until there are two consecutive negative results (both URT and LRT samples if both are collected) in a clinically recovered patient at least 24 hours apart. If local infection control practice requires two negative results before removal of droplet precautions, specimens may be collected as often as daily.

E. Management of hypoxemic respiratory failure and ARDS

Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing standard oxygen therapy. Patients may continue to have increased work of breathing or hypoxemia even when oxygen is delivered via a face mask with reservoir bag (flow rates of 10-15 L/min, which is typically the minimum flow required to maintain bag inflation; FIO2 0.60-0.95). Hypoxemic respiratory failure in ARDS commonly results from intrapulmonary ventilation-perfusion mismatch or shunt and usually requires mechanical ventilation.
High-flow nasal oxygen (HFNO) or non-invasive ventilation (NIV) should only be used in selected patients with hypoxemic respiratory failure. The risk of treatment failure is high in patients with MERS treated with NIV, and patients treated with either HFNO or NIV should be closely monitored for clinical deterioration. HFNO systems can deliver 60 L/min of gas flow and FiO₂ up to 1.0; paediatric circuits generally only handle up to 15 L/min, and many children will require an adult circuit to deliver adequate flow. Compared to standard oxygen therapy, HFNO reduces the need for intubation. Patients with hypercapnia (exacerbation of obstructive lung disease, cardiogenic pulmonary oedema), hemodynamic instability, multi-organ failure, or abnormal mental status should generally not receive HFNO, although emerging data suggest that HFNO may be safe in patients with mild-moderate and non-worsening hypercapnia.25 Patients receiving HFNO should be in a monitored setting and cared for by experienced personnel capable of endotracheal intubation in case the patient acutely deteriorates or does not improve after a short trial (about 1 hr). Evidence-based guidelines on HFNO do not exist, and reports on HFNO in MERS patients are limited.

NIV guidelines make no recommendation on use in hypoxemic respiratory failure (apart from cardiogenic pulmonary oedema and post-operative respiratory failure) or pandemic viral illness (referring to studies of SARS and pandemic influenza). Risks include delayed intubation, large tidal volumes, and injurious transpulmonary pressures. Limited data suggest a high failure rate when MERS patients receive NIV. Patients receiving a trial of NIV should be in a monitored setting and cared for by experienced personnel capable of endotracheal intubation in case the patient acutely deteriorates or does not improve after a short trial (about 1 hr). Patients with hemodynamic instability, multiorgan failure, or abnormal mental status should not receive NIV.

Recent publications suggest that newer HFNO and NIV systems with good interface fitting do not create widespread dispersion of exhaled air and therefore should be associated with low risk of airborne transmission.

Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions. Patients with ARDS, especially young children or those who are obese or pregnant, may desaturate quickly during intubation. Pre-oxygenate with 100% FiO₂ for 5 minutes, via a face mask with reservoir bag, bag-valve mask, HFNO, or NIV. Rapid sequence intubation is appropriate after an airway assessment that identifies no signs of difficult intubation.

Implement mechanical ventilation using lower tidal volumes (4–8 ml/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cmH₂O). This is a strong recommendation from a clinical guideline for patients with ARDS, and is suggested for patients with sepsis-induced respiratory failure who do not meet ARDS criteria. The initial tidal volume is 6 ml/kg PBW; tidal volume up to 8 ml/kg PBW is allowed if undesirable side effects occur (e.g. dysynchrony, pH <7.15). Hypercapnia is permitted if meeting the pH goal of 7.30-7.45. Ventilator protocols are available. The use of deep sedation may be required to control respiratory drive and achieve tidal volume targets. Although high driving pressure (plateau pressure–PEEP) may more accurately predict increased mortality in ARDS compared to high tidal volume or plateau pressure, RCTs of ventilation strategies that target driving pressure are not currently available.
In patients with severe ARDS, prone ventilation for >12 hours per day is recommended. Application of prone ventilation is strongly recommended for adult and paediatric patients with severe ARDS but requires sufficient human resources and expertise to be performed safely.

Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion.

In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested. PEEP titration requires consideration of benefits (reducing atelectrauma and improving alveolar recruitment) vs. risks (end-inspiratory overdistension leading to lung injury and higher pulmonary vascular resistance). Tables are available to guide PEEP titration based on the FiO₂ required to maintain SpO₂. A related intervention of recruitment manoeuvres (RMs) is delivered as episodic periods of high continuous positive airway pressure [30–40 cm H₂O], progressive incremental increases in PEEP with constant driving pressure, or high driving pressure; considerations of benefits vs. risks are similar. Higher PEEP and RMs were both conditionally recommended in a clinical practice guideline. For PEEP, the guideline considered an individual patient data meta-analysis of 3 RCTs. However, a subsequent RCT of high PEEP and prolonged high-pressure RMs showed harm, suggesting that the protocol in this RCT should be avoided. Monitoring of patients to identify those who respond to the initial application of higher PEEP or a different RM protocol, and stopping these interventions in non-responders, is suggested.

In patients with moderate-severe ARDS (PaO₂/FiO₂ <150), neuromuscular blockade by continuous infusion should not be routinely used. One trial found that this strategy improved survival in patients with severe ARDS (PaO₂/FiO₂ <150) without causing significant weakness, but results of a recent larger trial found that use of neuromuscular blockade with high PEEP strategy was not associated with survival when compared to a light sedation strategy without neuromuscular blockade. Continuous neuromuscular blockade may still be considered in patients with ARDS in certain situations: ventilator dyssynchrony despite sedation, such that tidal volume limitation cannot be reliably achieved; or refractory hypoxemia or hypercapnia.

In settings with access to expertise in extracorporeal life support (ECLS), consider referral of patients with refractory hypoxemia despite lung protective ventilation. A recent guideline made no recommendation about ECLS in patients with ARDS. Since then, an RCT of ECLS for patients with ARDS was stopped early and found no statistically significant difference in the primary outcome of 60-day mortality between ECLS and standard medical management (including prone positioning and neuromuscular blockade). However, ECLS was associated with a reduced risk of the composite outcome of mortality and crossover to ECLS, and a post hoc Bayesian analysis of this RCT showed that ECLS is very likely to reduce mortality across a range of prior assumptions. In patients with MERS-CoV infection, ECLS vs. conventional treatment was associated with reduced mortality in a cohort study. ECLS should only be offered in expert centres with a sufficient case volume to maintain expertise and that can apply the IPC measures required for nCoV patients.

Avoid disconnecting the patient from the ventilator, which results in loss of PEEP and atelectasis. Use in-line catheters for airway suctioning and clamp endotracheal tube when
disconnection is required (for example, transfer to a transport ventilator)

F. Management of septic shock

Recognize septic shock in adults when infection is suspected or confirmed AND vasopressors are needed to maintain mean arterial pressure (MAP) ≥65 mmHg AND lactate is ≥2 mmol/L, in absence of hypovolemia. Recognize septic shock in children with any hypotension (systolic blood pressure [SBP] <5th centile or >2 SD below normal for age) or 2-3 of the following: altered mental state; tachycardia or bradycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children); prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia.

In the absence of a lactate measurement, use MAP and clinical signs of perfusion to define shock. Standard care includes early recognition and the following treatments within 1 hour of recognition: antimicrobial therapy and fluid loading and vasopressors for hypotension. The use of central venous and arterial catheters should be based on resource availability and individual patient needs. Detailed guidelines are available for the management of septic shock in adults and children.

In resuscitation from septic shock in adults, give at least 30 ml/kg of isotonic crystalloid in adults in the first 3 hours. In resuscitation from septic shock in children in well-resourced settings, give 20 ml/kg as a rapid bolus and up to 40-60 ml/kg in the first 1 hr.

Do not use hypotonic crystalloids, starches, or gelatins for resuscitation.

Fluid resuscitation may lead to volume overload, including respiratory failure. If there is no response to fluid loading and signs of volume overload appear (for example, jugular venous distension, crackles on lung auscultation, pulmonary oedema on imaging, or hepatomegaly in children), then reduce or discontinue fluid administration. This step is particularly important where mechanical ventilation is not available. Alternate fluid regimens are suggested when caring for children in resource-limited settings.

Crystalloids include normal saline and Ringer's lactate. Determine need for additional fluid boluses (250-1000 ml in adults or 10-20 ml/kg in children) based on clinical response and improvement of perfusion targets. Perfusion targets include MAP (>65 mmHg or age-appropriate targets in children), urine output (>0.5 ml/kg/hr in adults, 1 ml/kg/hr in children), and improvement of skin mottling, capillary refill, level of consciousness, and lactate. Consider dynamic indices of volume responsiveness to guide volume administration beyond initial resuscitation based on local resources and experience. These indices include passive leg raises, fluid challenges with serial stroke volume measurements, or variations in systolic pressure, pulse pressure, inferior vena cava size, or stroke volume in response to changes in intrathoracic pressure during mechanical ventilation.

Starches are associated with an increased risk of death and acute kidney injury vs. crystalloids. The effects of gelatins are less clear, but they are more expensive than crystalloids. Hypotonic (vs. isotonic) solutions are less effective at increasing intravascular volume. Surviving Sepsis also suggests albumin for resuscitation when patients require
substantial amounts of crystalloids, but this conditional recommendation is based on low-quality evidence.

Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP ≥65 mmHg in adults and age-appropriate targets in children.

If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and local tissue necrosis. If extravasation occurs, stop infusion. Vasopressors can also be administered through intraosseous needles.

If signs of poor perfusion and cardiac dysfunction persist despite achieving MAP target with fluids and vasopressors, consider an inotrope such as dobutamine.

Vasopressors (i.e. norepinephrine, epinephrine, vasopressin, and dopamine) are most safely given through a central venous catheter at a strictly controlled rate, but it is also possible to safely administer them via peripheral vein and intraosseous needle. Monitor blood pressure frequently and titrate the vasopressor to the minimum dose necessary to maintain perfusion and prevent side effects. Norepinephrine is considered first-line in adult patients; epinephrine or vasopressin can be added to achieve the MAP target. Because of the risk of tachyarrhythmia, reserve dopamine for selected patients with low risk of tachyarrhythmia or those with bradycardia. In children with cold shock (more common), epinephrine is considered first-line, while norepinephrine is used in patients with warm shock (less common).

G. Prevention of complications

Implement the following interventions (Table 4) to prevent complications associated with critical illness. These interventions are based on Surviving Sepsis or other guidelines, and are generally limited to feasible recommendations based on high quality evidence.

Table 4: Prevention of complications

<table>
<thead>
<tr>
<th>Anticipated Outcome</th>
<th>Interventions</th>
</tr>
</thead>
</table>
| Reduce days of invasive mechanical ventilation | • Use weaning protocols that include daily assessment for readiness to breathe spontaneously  
• Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions |
| Reduce incidence of ventilator associated pneumonia | • Oral intubation is preferable to nasal intubation in adolescents and adults  
• Keep patient in semi-recumbent position (head of bed elevation 30- |
| 45° | • Use a closed suctioning system; periodically drain and discard condensate in tubing  
     • Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely  
     • Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days |
<table>
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<tbody>
<tr>
<td><strong>Reduce incidence of venous thromboembolism</strong></td>
<td>• Use pharmacological prophylaxis (low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices).</td>
</tr>
<tr>
<td><strong>Reduce incidence of catheter related bloodstream infection</strong></td>
<td>• Use a checklist with completion verified by a real-time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed</td>
</tr>
<tr>
<td><strong>Reduce incidence of pressure ulcers</strong></td>
<td>• Turn patient every two hours</td>
</tr>
</tbody>
</table>
| **Reduce incidence of stress ulcers and gastrointestinal bleeding** | • Give early enteral nutrition (within 24–48 hours of admission)  
     • Administer histamine-2 receptor blockers or proton-pump inhibitors in patients with risk factors for GI bleeding. Risk factors for gastrointestinal bleeding include mechanical ventilation for ≥48 hours, coagulopathy, renal replacement  
     • therapy, liver disease, multiple comorbidities, and higher organ failure score |
| **Reduce incidence of ICU-related weakness** | • Actively mobilize the patient early in the course of illness when safe to do so |

H. **Specific anti-Novel-CoV treatments and clinical research**

There is no current evidence from RCTs to recommend any specific anti-nCoV treatment for patients with suspected or confirmed nCoV. Unlicensed treatments should be administered only in the context of ethically-approved clinical trials or the Monitored Emergency Use of Unregistered Interventions Framework (MEURI), with strict monitoring. Clinical characterization protocols are available, including the SPRINT-SARI https://isaric.tghn.org/sprint-sari/ and WHOISARIC forms available at

I. Special considerations for pregnant patients

Pregnant women with suspected or confirmed nCoV should be treated with supportive therapies as described above, taking into account the physiologic adaptations of pregnancy.

The use of investigational therapeutic agents outside of a research study should be guided by individual risk-benefit analysis based on potential benefit for mother and safety to fetus, with consultation from an obstetric specialist and ethics committee.

Emergency delivery and pregnancy termination decisions are challenging and based on many factors: gestational age, maternal condition, and fetal stability. Consultations with obstetric, neonatal, and intensive care specialists (depending on the condition of the mother) are essential.

Note: These guidelines are preliminary in nature and will be updated as soon as more information on clinical profile and treatment are available.
Dear Prof. (Dr.) Dubey

As you are aware, antimicrobial resistance is an increasingly serious threat to global public health that requires urgent action across various sectors. New resistance are emerging and spreading globally, threatening our ability to treat infectious diseases, resulting in prolonged illness disability and death.

To combat this growing problem, the Ministry of Health and family Welfare (MoHFW) launched a “National Programme on Antimicrobial Resistance Containment: with NCDC as a national focal point for implementation of the programme in 2012. Under this programme national AMR Surveillance network has been established which at present includes 25 Medical College labs in 23 states across the country. During 2019-20, a total of 5 additional labs are to be included in this network.

Gandhi Medical College, Bhopal has been identified as one of the labs to be included in the National AMR Surveillance Network and towards this, MOU is to be signed between Gandhi Medical College, Bhopal and NCDC. Copy of MOU is enclosed. It is requested to sign the duly filled in MOU and send it to NCDC by post and scanned copy may be sent by e-mail to amrsurveillance@gmail.com at the earliest.

We look forward to your active participation in this activity.

Yours sincerely,

(Dr. Sujeet K. Singh)

Dr T N Dubey,
Dean,
Gandhi Medical College
Sultania Road, Bhopal
Madhya Pradesh-462001

Copy to:
1. Dr Sheela meena, Deputy Director & SSO (IDSP), Directorate of Health Services, 6th Floor, Satpura Bhawan, Bhopal-462004
2. Dr. Nikhilchand Chandra, Sr. Regional Director, Regional Office for Health and Family Welfare, A-28, Vidhay Nagar, Behind Axis bank, Hoshangabad Road, Bhopal-462026
Subject: Regarding collection of samples for 2019 novel coronavirus (nCoV) outbreak

The Virus Research and Diagnostic Laboratories (VRDL) Network

Dear All,

In view of the 2019 novel coronavirus (nCoV) outbreak, you are requested to adhere to the following guidelines for collection of samples.

1. For persons with travel history to the Wuhan province in China after 13th January 2020, respiratory samples (nasopharyngeal swab, oropharyngeal swab) and blood samples should be collected from all the persons whether symptomatic or asymptomatic.

2. For travel history to the rest of China, respiratory and blood samples will be collected only from symptomatic cases.

Based on my conversation with the health secretary today, I have requested the Ministry of Health and Family Welfare to clarify the above mentioned guidelines for collection of samples from people with travel history to China.

This is for your kind information and necessary action.

With best Regards

Yours sincerely

(Balram Bhargava)

(Prof. Balram Bhargava)
PROTOCOL FOR SENDING DAILY HEALTH STATUS OF PASSENGERS UNDER OBSERVATION

SOPs for SSOs

1) SSU will receive line list / emails of Passengers under observation, coming from 2019-nCoV affected countries* from APHO, Office of Emergency Medical Relief, MEA or CSU.

2) SSU will share the line list / mails with DSUs immediately and Ensure immediate tracing of Passengers under observation by DSUs.

3) Information regarding any passenger who travels to another State will be immediately notified to the concerned State Health authority and comment shared in Format C.

4) SSU will receive complete investigation details in enclosed Format A from DSU as soon as possible on the same day.

5) SSU will ensure daily follow up of Passengers under observation for 28 days starting from date of last exposure/arrival.

6) SSU to compile the line list of all Passengers under observation daily, updating daily health status of Travelers / Suspects in enclosed Format B and share daily report of health status of Passengers under observation with CSU / EMR daily (Format C).

7) If any passenger is not traceable initially or during any duration while being followed up should be immediately notified to CSU.

All SSUs will keep themselves updated by routinely checking WHO and NCDC website on 2019-nCoV. Any guidelines shared by MoHFW on 2019-nCoV will be disseminated to concerned State/District authorities.

SOPs for DSU

1) Receive line list/ email of Passengers under observation from SSU/CSU/APHO.

2) Immediately trace the Passengers under observation and begin investigation and fill the enclosed format A. On first visit, passenger is to be provided a mask to be put on immediately in case symptoms such as fever and cough develop.

3) Passenger will be provided following advice during first visit by Health care provider:
   a. You will also receive daily calls/visit from health department to ask your health status for the day, kindly cooperate with them.
   b. You are requested to self-monitor for development of symptoms suggestive of nCoV i.e. Fever and Cough for 28 days from the date of arrival from nCoV affected countries*.
   c. In case you initiation of symptoms (fever and cough), put on the mask immediately, restrict your outdoor movement and contact 24 hours helpline number 011-23978046. The Call operator will tell you whom to contact further. In the meanwhile, keep yourself isolated in your house/room.

Continue......
4) DSU has to ensure daily follow up of Passengers under observation for 28 days starting from date of possible exposure/arrival. Passengers will also be counseled for self-reporting of illness suggestive of 2019-nCoV.

5) Information regarding any passenger who travels to another District will be immediately notified to the concerned District Health authority and SSU.

6) In case, Passengers under observation develop symptoms suggestive of ARI/ILI, S/he has to be shifted to identified health facility with isolation unit (as transmission pattern of the virus is still unclear). Laboratory guidelines will be shared soon.

7) Daily follow up of Passengers under observation to be continued for 28 days starting from the date of last exposure/departure.

8) If any passenger is not traceable initially or during any duration while being followed up should be immediately notified to SSU/CSU.

9) Daily health status to be shared with SSU every day by 12:00 PM.
   *Currently China only.

Advisory:

1. Format C to be sent positively every day to idsp-npo@nic.in by 12:00 pm including 'Nil' report.
2. The passenger has to be observed from 28 days from the day of possible exposure/arrival to India.
3. In case passenger develop any symptom, s/he will be requested to wear amask. Health care provider will arrange for the transfer of such patient from home to isolation facility. During the procedure, standard infection control practice for eg. wearing mask and hand washing should be performed by Health care providers.
Ministry of Health and Family Welfare
Cabinet Secretary holds high level review on Novel Coronavirus

All travellers from China since 15 Jan 2020 shall be tested for nCoV

30 JAN 2020
High level review meetings on preparedness for Novel Coronavirus are regularly being held by the Union Health Minister, Cabinet Secretary and Health Secretary.

Cabinet Secretary has held four review meetings so far. Today he reviewed the preparedness with the concerned Ministries of Health & Family Welfare, External Affairs, Defence, Home Affairs, Civil Aviation, Information & Broadcasting, Labour & Employment, and Shipping.

A Video Conference with the Chief Secretaries of the States and UTs was also taken by the Cabinet Secretary.

Following today’s meeting of the Cabinet Secretary, a number of new steps have been taken:

All those who have come from China after 15th January, 2020 shall be tested as there in an incubation period for the virus.
The Cabinet Secretary has stressed upon the need for 14 days' home isolation for all those who have returned from China.
It is also advised that trip to China should be avoided.
It was also decided to augment the lab facilities.
Six more labs will start functioning from today: (1) NIV Bengaluru Unit, (2) Victoria Hospital Campus, KR Road, Fort, Bengaluru (3), AIIMS, New Delhi (4), NCDC, Delhi (5) Kasturba Hospital for infectious diseases, Mumbai (6) NIV – Kerala Unit.

Six more labs will start function by 31st January, 2020: (1) ICMR – NICED, Kolkata (2) GMC, Secunderabad (3) KG, Lucknow (4) SMS, Jaipur (5) IGGMC, Nagpur (6) KIPMR, Chennai.

Discharge portal for patients have been prepared by DGHS which is being disseminated.
It was decided to put up check-posts in relevant tourist locations for better surveillance.
Gram panchayats are being organised to make people more aware regarding the symptoms, precautions and measures taken by the State Governments regarding prevention and management for Novel Coronavirus in villages bordering Nepal.
States have also been advised to open control rooms, appoint a nodal officer and popularize the control room number.
IEC material is to be prepared in local language by the concerned States.

Status:

As on 30th January, 2020, a total of 7711 confirmed cases reported by 31 provinces, 1370 serious cases, 170 deaths, 124 discharged and cured cases and 12167 suspected cases. Most of the deaths reported in elderly with co-morbid conditions.

The number of reported confirmed cases abroad are Thailand (14), Singapore (10), Australia (5), USA (5), Japan (8), south Korea (4), Malaysia (7), France (4), Vietnam (2) Canada (2), Nepal (1), Cambodia (1), Sri Lanka (1) Germany (4), UAE (4), Hong Kong (10), Macao (7),
Taiwan (8), Finland (1), Angola (1) and India (1), total of 21 countries.

One positive case of Novel Coronavirus patient, of a student studying the Wuhan university, has been reported in Kerala. The patient has tested positive for Novel Coronavirus and is in isolation in the hospital. The patient is stable and is being closely monitored.

Screening data: from 21 airports

Total flights screened: 234
Total passengers screened: 43346

Laboratory Support:

National Institute of Virology, Pune is fully geared up to test samples of nCoV. Adequate lab reagents are available with NIV, Pune to test 5000 samples. 49 samples have been referred to NIV for testing. 48 have tested as Negative.

****
Title: Specimen Collection, Packaging and Transport Guidelines for 2019 novel Coronavirus (2019-nCoV)

Scope:
To be used by the Government health authorities/ hospitals/ clinicians/ laboratories planning to collect appropriate clinical samples as indicated for diagnosis of 2019-nCoV.

Purpose:
This document describes the information for collection, packaging and transport of clinical specimens to Influenza group at ICMR-National Institute of Virology (NIV), Pune, Maharashtra for diagnosis of 2019 Novel Coronavirus (2019-nCoV)

Responsibilities:
- The clinician should decide necessity for collection of clinical specimens for laboratory testing of 2019-nCoV only after following the case definition as given by the health authorities, Government of India.
- Appropriate clinical sample need to be collected by laboratory personnel/ health care worker trained in specimen collection in presence of a clinician.
- By following all biosafety precautions and using personal protective equipment (PPEs), clinical samples need to be sent to the designated laboratory (ICMR-NIV, Pune) by following standard triple packaging.

Selection of patient:
Any person who presents with Severe Acute Respiratory Illness (SARI) AND any one of the following i.e. a history of travel from Wuhan, China in 14 days prior to symptoms onset; disease in healthcare worker working in an environment of SARI patients; unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment; should be urgently investigated. Updated case definition need to be followed as per MOHFW, Govt of India which is available on the website www.mohfw.gov.in

Specimen collection details:
(Adapted from the WHO guidelines on 2019-nCoV):

<table>
<thead>
<tr>
<th>Specimen type</th>
<th>Collection materials</th>
<th>Transport to laboratory</th>
<th>Storage till testing</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasopharyngeal and oropharyngeal swab</td>
<td>Dacron or polyester flocked swabs*</td>
<td>4 °C</td>
<td>≤5 days: 4 °C; &gt;5 days: -70 °C</td>
<td>The nasopharyngeal and oropharyngeal swabs should be placed in the same tube to increase the viral load.</td>
</tr>
<tr>
<td>Bronchoalveolar lavage</td>
<td>sterile container*</td>
<td>4 °C</td>
<td>≤48 hours: 4 °C; &gt;48 hours: -70 °C</td>
<td>There may be some dilution of pathogen, but still a worthwhile specimen</td>
</tr>
<tr>
<td>Tracheal aspirate, nasopharyngeal aspirate or nasal wash</td>
<td>sterile container*</td>
<td>4 °C</td>
<td>≤48 hours: 4 °C; &gt;48 hours: -70 °C</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Sputum</td>
<td>sterile container</td>
<td>4 °C</td>
<td>≤48 hours: 4 °C; &gt;48 hours: -70 °C</td>
<td>Ensure the material is from the lower respiratory tract</td>
</tr>
<tr>
<td>Tissue from biopsy or autopsy including from lung</td>
<td>sterile container with saline</td>
<td>4 °C</td>
<td>≤24 hours: 4 °C; &gt;24 hours: -70 °C</td>
<td>Autopsy sample collection preferably to be avoided</td>
</tr>
<tr>
<td>Serum (2 samples – acute and convalescent)</td>
<td>Serum separator tubes (adults: collect 3-5 ml whole blood)</td>
<td>4 °C</td>
<td>≤5 days: 4 °C; &gt;5 days: -70 °C</td>
<td>Collect paired samples: acute – first week of illness; convalescent – 2 to 3 weeks later</td>
</tr>
</tbody>
</table>

*For transport of samples for viral detection, use VTM (viral transport medium) containing antifungal and antibiotic supplements. Avoid repeated freezing and thawing of specimens.

Specimen labelling and processing:
- Personal protective equipment (apron, hand gloves, face shield, N95 Masks etc.) need to be used and all biosafety precautions should be followed so as to protect individuals and the environment.
- Proper labelling (name/age/gender/specimen ID) need to be done on specimen container and other details of sender (name/address/phone number) on the outer container by mentioning “To be tested for 2019-nCoV”.
- For any queries, the nodal officer from ICMR-NIV Pune (Dr Yogesh K. Gurav, Scientist E) may be contacted (Phone 020-26006290/ 26006390; Email: gurav.yk@gmail.com/gurav.yk@gov.in) and need to be informed in advance before sending specimens to ICMR-NIV, Pune.
Specimen Collection, Packaging and Transport Guidelines for 2019 novel Coronavirus (2019-nCoV)

<table>
<thead>
<tr>
<th>Requirements for Clinical Samples Collection, Packaging and Transport</th>
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</thead>
<tbody>
<tr>
<td>1. Sample vials and Virus Transport Medium (VTM)</td>
</tr>
<tr>
<td>2. Adsorbent material (cotton, tissue paper, paraffin, seizer, cello tape)</td>
</tr>
<tr>
<td>3. A leak-proof secondary container (e.g., ziplock pouch, cryobox, 50 mL centrifuge tube, plastic container)</td>
</tr>
<tr>
<td>4. Hard-frozen Gel Packs</td>
</tr>
<tr>
<td>5. A suitable outer container (e.g., thermocol box, ice-box, hard-board box) (minimum dimensions: 10 x 10 x 10 cm)</td>
</tr>
</tbody>
</table>

Procedure for Specimen Packaging and Transport

| 1. Use PPE while handling specimen |
| 2. Seal the neck of the sample vials using parafilm |
| 3. Cover the sample vials using absorbent material |
| 4. Arrange primary container (vial) in secondary container |
| 5. Placing the centrifuge tube inside a zip-lock pouch |
| 6. Placing the zip-lock pouch inside a sturdy plastic container and seal the neck of the container |
| Note: Sample vials can also be placed inside a zip-lock pouch, covered in absorbent material and secured by heat-sealing or rubber bands. Then, the zip-lock pouch should be placed inside another plastic pouch and secured |
| 7. Using a thermocol box as an outer container and placing the secondary container within it, surrounded by hard-frozen gel packs |
| 8. Placing the completed Specimen Referal Form (available on www.niv.co.in) and request letter inside a leak-proof, zip-lock pouch |
| 9. Securing the zip-lock pouch with the Specimen Referal Form on the outer container |
| 10. Attaching the labels: Senders' address, contact number, Consignee's address/contact number, Biological substance Category B, 'UN 3373'; Orientation label, Handle with care |

Documents to accompany:
1) Packaging list/proforma Invoice 2) Air way bill (for air transport) (to be prepared by sender or shipper) 3) Value equivalence document (for road/rail/sea transport) [Note: 1. A vaccine-carrier/ice-box can also be used as an outer container. The minimum dimensions of the outer container should be 10 x 10 x 10 cm (length x width x height)]

Routing of samples:
• Clinical specimens, official documents and Specimen request forms for testing of 2019-nCoV need to be sent to the ICMR-NIV address (The Director, ICMR-National Institute of Virology, 20-A, Dr Ambedkar Road, Pune, Maharashtra, Pin: 4110001).
• For shipment-related queries/information, kindly contact Dr Sumit Bharadwaj (Scientist B, Influenza Group) on email: sumitduttbhardwaj@gmail.com, phone 020-26006290/26006390
**Advisory to IDSP SSUs: 2019 – Novel Coronavirus, China**

Cluster of Pneumonia were being reported from Wuhan City, Hubei Province in China. Chinese authorities have identified it to be caused by a new type of Coronavirus (novel Corona virus, 2019-nCoV). Coronavirus are large family of viruses with some causing less severe disease such as common cold and others more severe diseases such as MERS and SARS. The human to human transmission is variable with some easily transmitting and some do not transmit readily between people. As per information shared by WHO as of 12th January, 2020 forty-one(41) confirmed cases have been detected in Wuhan City with one death. Recently on 13th January, 2020 the Thailand’s Ministry of Public Health (MoPH) has reported the first imported case of lab confirmed novel coronavirus (2019-nCoV) from China.

Hence, in this regards, it is desired that necessary precautions are to be taken to prevent the occurrence of these cases in the Country. It is recommended that all State Surveillance Officers intensify the surveillance system for Acute Respiratory Infections/ Influenza like Illness (ARI/ILI) and screening at community level as well as health facility level to identify and respond to clustering of cases for early detection of impending SARI outbreaks through IDSP network. The case definitions for surveillance currently provided by WHO is annexed. In view of the limited information regarding the epidemiological correlates and transmission patterns, the guidance is subject to change at a short notice.

It is also advised to all State Surveillance Units to keep a constant vigil and raise the level of awareness and knowledge of surveillance officers and healthcare providers (first or early responders) on case definitions, basic infection prevention control measures and standard precautions to be followed during the care and treatment of suspected patients. It is requested to review the preparedness and response plans/measure at the State level to handle the situation if need arises.

The technical guidance shared by WHO is attached.

The Ministry of Health and Family Welfare (MoHFW), GoI is monitoring the situation closely in consultation with WHO and other stakeholders and any update received would be shared with the States.

The advisory will be followed by surveillance and laboratory guidelines.
Annexure

The case definitions for surveillance currently provided by WHO are as follows:

1. A person with SARI, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation (clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised);

   AND any of the following

   a. A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset.

   b. The disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel;

   c. The person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation.

2. Individuals with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures:

   a. Close physical contact with a confirmed case of nCoV infection, while that patient was symptomatic;

   b. A healthcare facility in a country where hospital-associated nCoV infections have been reported;

   c. Direct contact with animals (if animal source is identified) in countries where the nCoV is known to be circulating in animal populations or where human infections have occurred as a result of presumed zoonotic transmission*.

*To be added once if animal source is identified as a source of infection
Ministry of Health and Family Welfare  
Government of India  

SELF REPORTING FORM  

FOR ALL TRAVELLERS ARRIVING from 2019-nCoV affected countries*  
(TO BE PRESENTED AT THE HEALTH/IMMIGRATION COUNTER)  

All persons coming to India from 2019-nCoV affected countries are required to fill-up this proforma. You are requested to provide the following information to safeguard your own health.

<table>
<thead>
<tr>
<th>Personal Information</th>
<th>Contact Address in India for All Travellers:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Name of the passenger</td>
<td>House Number</td>
</tr>
<tr>
<td>2 Seat No.</td>
<td>3 Flight No.</td>
</tr>
<tr>
<td>4 Passport No.</td>
<td>5 Date of Arrival</td>
</tr>
<tr>
<td>6 Port of origin of Journey</td>
<td>7 Port of final destination</td>
</tr>
<tr>
<td>8 Street/ Village</td>
<td>9 Tehsil</td>
</tr>
<tr>
<td>10 District/ City</td>
<td>11 State</td>
</tr>
<tr>
<td>12 Pin</td>
<td>13 Pin</td>
</tr>
<tr>
<td>14 Residence Number</td>
<td>15 Mobile Number</td>
</tr>
<tr>
<td>16 E mail ID</td>
<td></td>
</tr>
</tbody>
</table>

(PART-A)

I) During your visit to China, what all cities did you visit?  

II) Have you visited Wuhan city in Hubei province, China in last 14 days? Yes/ No  

If yes, period and duration  

a. During your visit, did you visit any sea food market? Yes / No  

b. Are you suffering from any of the following symptoms**  

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory distress</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature of the passenger

*CHINA  

**If answer to any of the above questions is "yes", please present yourself to the Airport Health counter for preliminary screening.

In case you develop symptoms such as fever and cough within 28 days of leaving this airport, restrict your outdoor movement and contact MoHFW’s 24 hours helpline number 011-23978046. Call operator will tell you whom to contact further. In the meanwhile, keep yourself isolated in your house/room.
Ministry of Health and Family Welfare
Government of India

SELF REPORTING FORM

FOR ALL TRAVELLERS ARRIVING from 2019-nCoV affected countries*
(TO BE PRESENTED AT THE HEALTH/IMMIGRATION COUNTER)

All persons coming to India from 2019-nCoV affected countries are required to fill-up this proforma. You are requested to provide the following information to safeguard your own health.

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<th>Contact Address in India for All Travellers:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Name of the passenger</td>
<td>House Number</td>
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<tr>
<td>2  Seat No.</td>
<td>Street/ Village</td>
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<tr>
<td>3  Flight No.</td>
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<tr>
<td>4  Passport No.</td>
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<tr>
<td>5  Date of Arrival</td>
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<tr>
<td>6  Port of origin of Journey</td>
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<tr>
<td>7  Port of final destination</td>
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</tbody>
</table>

(PART-A)

III) During your visit to China, what all cities did you visit? __________________________

IV) Have you visited Wuhan city in Hubei province, China in last 14 days? Yes/ No

If yes, period and duration __________________________

a. During your visit, did you visit any sea food market? Yes / No
b. Are you suffering from any of the following symptoms**
   - Fever Yes No
   - Cough Yes No
   - Respiratory distress Yes No

Signature of the passenger

*CHINA

**If answer to any of the above questions is “yes”, please present yourself to the Airport Health counter for preliminary screening.

In case you develop symptoms such as fever and cough within 28 days of leaving this airport, restrict your outdoor movement and contact MoHFW’s 24 hours helpline number 011-23978046. Call operator will tell you whom to contact further. In the meanwhile, keep yourself isolated in your house/room.
### A Patient Information

<table>
<thead>
<tr>
<th>Date of reporting to health facility</th>
<th>Name of Reporting Health Facility</th>
<th>Date of interview</th>
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</thead>
<tbody>
<tr>
<td>State</td>
<td>Local Patient ID</td>
<td></td>
</tr>
<tr>
<td>Name of interviewer</td>
<td>Address of interviewer:</td>
<td>Contact Number of interviewer</td>
</tr>
<tr>
<td>Name of patient:</td>
<td>Age</td>
<td>Gender</td>
</tr>
<tr>
<td>Case Classification*: Confirmed</td>
<td>Suspect</td>
<td></td>
</tr>
</tbody>
</table>

### B Sociodemographic Profile

<table>
<thead>
<tr>
<th>Residency:</th>
<th>Non-Indian (name of country):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian</td>
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</tr>
<tr>
<td>Postal Address</td>
<td>District</td>
</tr>
</tbody>
</table>

### C Clinical Information

#### 1 Patient Clinical Course

1.1 Date of Onset of symptoms

1.2 Date of first contact with health facility

1.3 Date of admission

1.4 Outcome (circle): Under treatment/ Discharged/ LAMA/ Died/ Cured

1.5 Date of death (if applicable)

1.6 Cause of death (As mentioned on death certificate):

1.7 Was patient ventilated: Yes/No

#### 2 Patient Symptoms at Admission (tick all reported)

- a) Fever/chills
- b) General weakness
- c) Cough
- d) Runny nose
- e) Any other, Specify
- f) Sore throat
- g) Breathlessness
- h) Diarrhea
- i) Pain(circle) muscular, chest, abdominal, joint
- j) Nausea/Vomiting
- k) Headache
- l) Irritability/confusion

### 3 Patient Signs at Admission: Details of following Signs to be taken from the case sheet if the patient is admitted

- a) Temperature
- b) Stridor (yes/no)
- c) Redness of eyes (yes/no)
- d) Abnormal Lung X-Ray findings (yes/no)
- e) Tachypnoea (yes/no)
- f) Abnormal lung auscultation (yes/no)
- g) Coma (yes/no)
- h) Seizure (yes/no)
- i) Any other (specify)

#### 4 Underlying Medical Conditions (tick all that apply)

- a) COPD
- b) Chronic Renal Disease
- c) Bronchitis
- d) Malignancy
- e) Diabetes
- f) Hypertension
- g) Asthma
- h) Pregnancy (trimester)
- i) Post-partum (< 6 weeks)
- j) Liver Disease
- k) Chronic neurological or neuromuscular disease
- l) Heart disease
- m) Immunocompromised condition including HIV, TB
- n) Any other (mention)
- o) None

### D Exposure History

5 Occupation (circle): Student/ Businessman/ Health care worker/ Health care lab worker/ animal handler/ any other (specify): ...

6 H/O contact with 2019-nCoV case (Circle): Yes/ No

6.1 If yes, then was it any of the following (tick appropriate option)

- a) Laboratory confirmed case of 2019-nCoV
- b) Person who is under investigation for 2019-nCoV while that person was ill

6.2 If yes to Q. 6, then mention contact setting (tick all that apply)

- a) While taking samples/ other investigations
- b) Clinical care of case (among HCW)
- c) Housekeeping (Hospital)
- d) Caregiver of the case (specify details of case)
- e) Visit to a place where 2019-nCoV cases are treated or sampled (specify detail)
- f) Immigration Staff at Point of Entry (details of place)
- g) Others, Specify

7 Is patient a member of a cluster of patients with severe acute respiratory illness (e.g., fever and pneumonia requiring hospitalization) of unknown etiology in which nCoV is being evaluated? (Yes/ No)

### E Travel History
Have you travelled outside India in the past one month? Yes/No. If yes then give date of arrival and fill details from Q. 8.1 onwards else skip to Q.9

8.1 Date of arrival to India:

8.2 Have you visited China? Yes/No. If yes, then fill following columns else skip to Q. 8.3

a) Duration of stay:

b) Date of arrival in China:

c) Date of departure from China:

d) Did you visit Wuhan (yes/no)

e) Any other places visited in China (specify)

f) During your stay, did you visit any animal market? Yes/No

8.3 Details of visit to any other country in past one month: Names of the countries

a) Duration of stay: Country name & duration

b) Date of arrival:

c) Date of departure:

Have you travelled within India in the past one month? Yes/No. If no, skip to Section F

If yes, details of visit to other places: Names of places

F LABORATORY INFORMATION (to be obtained from treating physician)

10 Any sample collected for confirmation of 2019-nCoV case (y/n)

a) If yes, then Type of sample collected

b) Date of collection

c) Sent to

d) Test Performed

e) Result

Suspect case
A. Patients with acute respiratory illness (fever, cough, breathing difficulty), AND with no other etiology that fully explains the clinical presentation AND at least one of the following:

- a history of travel to or residence in China in the 14 days prior to symptom onset, or
- patient is a health care worker who has been working in an environment where severe acute respiratory infections of unknown etiology are being cared for.
- worked or attended a health care facility where a confirmed case of 2019-nCoV is admitted in the last 14 days
- close contact with a confirmed case of 2019-nCoV in the 14 days prior to illness onset, or

B. A suspect case for whom testing for 2019-nCoV is inconclusive

Confirmed case
A person with laboratory confirmation of 2019-nCoV infection, irrespective of clinical signs and symptoms.

G ENLIST THE CONTACTS** IN THE FOLLOWING FORMAT

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name</th>
<th>Age</th>
<th>Gender</th>
<th>Type of contact (Family (f), community (c), health care facility (h))</th>
<th>Contact details (Phone Number)</th>
</tr>
</thead>
</table>

Contact**

- Health care associated exposure, including providing direct care for 2019-nCoV patients, working with health care workers infected with 2019-nCoV, visiting patients or staying in the same close environment of a 2019-nCoV patient. Clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised;
- Working together in close proximity or sharing the same classroom environment with a with 2019-nCoV patient
- Traveling together with 2019-nCoV patient in any kind of conveyance
- Living in the same household as a 2019-nCoV patient
Guidelines for Home based care of 2019-nCoV
Novel Corona Virus (2019-nCoV)

Any person(s) suggestive of 2019-nCoV, should be confined at home for a period of 14 days and avoid close contact with public and other members in the family.

Guiding Principles for home care

1. Be informed about the illness.
2. Stay home, preferably isolate himself / herself in a separate & well-ventilated room. Avoid common areas frequented by other members of the family.
3. Avoid close contact with others. If inevitable, always maintain at-least two metres distance.
4. Avoid having visitors.
5. Avoid frequent touching of face
6. Avoid hand shaking and wash hands frequently with soap and water. In case of non-availability of soap and water, commercially available hand rubs can be used
7. Take plenty of fluids.
8. Follow cough etiquettes -
   • Cover mouth and nose with a tissue/ handkerchief when coughing or sneezing; In case tissue/handkerchief is not available cough/ sneeze onto your upper arm or shoulder; coughing/ sneezing directly onto hands should not be done.
   • Turn away from others when coughing or sneezing
   • Do not spit/blow nose here and there, use a water filled receptacle for collecting sputum, thereby minimizing aerosol generation.

Monitor your health for appearance of symptoms like fever, cough and/or breathing difficulty. If you develop any of these symptoms Please do contact the nearest Government Health Facility.

For any further information Please contact District Surveillance Office.
2019-nCoV Case Definitions

Suspect case
A. Patients with acute respiratory illness (fever, cough, breathing difficulty), AND with no other etiology that fully explains the clinical presentation AND at least one of the following:
- a history of travel to or residence in China in the 14 days prior to symptom onset, or
- patient is a health care worker who has been working in an environment where severe acute respiratory infections of unknown etiology are being cared for.
- worked or attended a health care facility where a confirmed case of 2019-nCoV is admitted in the last 14 days
- close contact with a confirmed case of 2019-nCoV in the 14 days prior to illness onset, or

B. A suspect case for whom testing for 2019-nCoV is inconclusive

Confirmed case
A person with laboratory confirmation of 2019-nCoV infection, irrespective of clinical signs and symptoms.
Guidelines for Home Isolation

Suspected case of nCoV should confine them at home and avoid mixing up with public and members in the family.

Guiding Principles for home care:

- Suspected case should be informed about the illness.
- He/She has to stay home for fourteen days, preferably isolate himself/herself in a well ventilated room. Avoid common areas frequented by other family members of the family. If the living space is small and more than one person need to sleep in a room, ensure that the head end of patient and others sleeping in that room are in opposite direction (head to toe).
- Wear mask all the time. N-95 mask should be provided by the hospital/community health worker at the time of first visit. If mask is not readily available, mouth and nose should be covered with a piece of cloth or handkerchief. The mask or handkerchief should be changed every six hours or earlier if it gets wet.
- Avoid smoking.
- Avoid close contact with others. If inevitable, they should always maintain an arm’s length (at-least one meter).
- Avoid having visitors.
- Avoid hand shaking and wash hands frequently with soap & water
- Follow cough etiquettes whenever mask is not worn/not available –
  ➢ Cover mouth and nose with a tissue/handkerchief when coughing or sneezing;
  ➢ Do not spit/blow nose here and there
- Precautions to be taken by Care Giver: The care provider should
  ➢ Wear N-95 mask
  ➢ Wash hands frequently

These signs/symptoms needs to be identified early for immediate hospitalization.

- High grade fever
- Sore throat
- Dry cough
- Difficulty in breathing or shortness of breath
- Pain or pressure in the chest
- Sudden dizziness, Confusion
CHECKLIST OF ITEMS FOR PREPAREDNESS OF DISTRICT HOSPITAL LABS FOR SAMPLE COLLECTION FROM SUSPECTED NEW CORONAVIRUS OUTBREAK CASES:

It is recommended that sample collection from suspected new coronavirus outbreak cases should be carried out in a dedicated isolated room with independent air handling facility through use of exhaust fans and appropriate HEPA filters.

1. Guidelines for sample collection and transportation
2. Hand sanitizer
3. Round the clock running water and soap
4. PPE (Personal Protective Equipment) KITS containing at least:
   a. Head cover
   b. N-95 Respirator or equivalent
   c. Eye goggles/Face shield
   d. Full sleeved outer impermeable gown / Cover alls
   e. Gloves
   f. Shoe Covers
5. Patient proforma for 2019-nCoV testing
6. VTM vials
7. Sterile individually packed swabs with flocked nylon/Dacron/polyester tips with synthetic shaft with break point
8. Permanent markers
9. Tongue depressors
10. Triple layer packaging materials including:
    a. Paraffin tape or equivalent for sealing individual VTM vials
    b. Cotton or absorbent material
    c. Clear ziplock bags
    d. Ice packs
    e. Vaccine carriers
    f. Thermocol boxes
    g. Biohazard labels
11. Refrigerators
12. Deep freezers, if samples are to be stored beyond 48 hrs
13. Facilities for disposal of bio-medical waste as per latest bio medical waste management rules
    a. Colored bins with colored disposal bio-medical waste bags, available at the anteroom for bio medical hazard
    b. Puncture proof container
    c. Sodium hypochlorite
14. SPILL KIT containing at least:
    a. PPE KIT
    b. Warning labels — Biohazard, "DO NOT ENTER" sign
    c. Marker/Chalk
    d. 1% freshly prepared sodium hypochlorite
    e. Cotton/Tissue paper rolls/Blotting paper/Absorbent material
    f. Tongs /Forceps and Dust pan
    g. BMW Bags
    h. Mops and floor disinfectant
**Discharge Policy of nCoV Case**

Clinical samples of any suspect/probable case* of nCoV will be sent for laboratory confirmation to designated laboratories. The case will be kept in isolation at health facility/home till the time of receipt of laboratory results and given symptomatic treatment as per existing guidelines. If the laboratory results for nCoV are negative, the case shall be monitored for 14 days after their last contact with a confirmed 2019-nCoV case and may require re-testing as deemed necessary. In case the laboratory results are positive for nCoV, the case shall be managed as per the confirmed case management protocol. The case shall be discharged only after evidence of chest radiographic clearance and viral clearance in respiratory samples after two specimens test negative for nCoV within a period of 24 hours.

**Suspect Case**

- Send clinical samples for testing of 2019-nCoV
  - Sample result negative
    - Monitor for 14 days after their last contact with a confirmed 2019-nCoV case and may require re-testing
  - Sample result positive
    - Confirmed cases management protocol
    - Discharge after chest radiograph has cleared and two specimens turn negative within 24 hours

**Case Classification**

**Suspect case**

A. Patients with severe acute respiratory infection (fever, cough, and requiring admission to hospital), AND with no other etiology that fully explains the clinical presentation AND at least one of the following:

- a history of travel to or residence in the city of Wuhan, Hubei Province, China in the 14 days prior to symptom onset, or
- patient is a health care worker who has been working in an environment where severe acute respiratory infections of unknown etiology are being cared for.

B. Patients with any acute respiratory illness AND at least one of the following:

- close contact with a confirmed or probable case of 2019-nCov in the 14 days prior to illness onset, or
- visiting or working in a live animal market in Wuhan, Hubei Province, China in the 14 days prior to symptom onset, or
- worked or attended a health care facility in the 14 days prior to onset of symptoms where patients with hospital-associated 2019-nCov infections have been reported.

**Probable case**
Probable case: A suspect case for whom testing for 2019-nCoV is inconclusive or for whom testing was positive on a pan-coronavirus assay.

Confirmed case

A person with laboratory confirmation of 2019-nCoV infection, irrespective of clinical signs and symptoms.

Format A - for surveillance of Passenger for 2019-nCoV (To be filled by District Surveillance Unit and send to SSU daily)

| Full Name:                           |
|                                     |
| Age in years:                       |
|                                     |
| Gender:                             |
|                                     |
| Passport number:                    |
|                                     |
| Complete Address                    |
| (For Indian passport holders)       |
|                                     |
| Place of Stay during visit to India  |
| (For International tourists)        |
|                                     |
| Landline number with STD code       |
| (In India)                          |
|                                     |
| Mobile number (In India)            |
|                                     |
| Countries visited in last 14 days   |
|                                     |
| Date of arrival from 2019-nCoV      |
| affected country to India           |
|                                     |
| Passenger History:                  |
|                                     |

**Clinical details: write ‘N’ for No & ‘Y’ for Yes**

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Fever</th>
<th>Cough</th>
<th>Day</th>
<th>Date</th>
<th>Fever</th>
<th>Cough</th>
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In case of any symptoms the passenger should be immediately isolated at designated hospital following standard Infection, control practices.

Filled by..................................
<table>
<thead>
<tr>
<th>No. of passengers who have completed 28 days observation period:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative number of passengers under observation:</td>
</tr>
<tr>
<td>New passengers enrolled for observation:</td>
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<table>
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<tr>
<th>Sl.No.</th>
<th>Name</th>
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<th>Gender</th>
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**LINE LIST FORMAT FOR REPORTING OF DAILY HEALTH STATUS OF PASSENGERS UNDER OBSERVATION**

Form B (Line list of Format A from all DSUs to be updated on daily basis by SSU)

NAME OF STATE:
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<th>S. No.</th>
<th>State</th>
<th>New passengers enrolled for observation</th>
<th>Cumulative number of Passengers under observation</th>
<th>No. of passengers who have completed 28 days observation period</th>
<th>Number of passengers found symptomatic &amp; referred</th>
<th>Comments</th>
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