NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

2019-nCoV Quick Reference for Health Workers

Centre for Respiratory Diseases and Meningitis
National Institute for Communicable Diseases (NICD)
24-hours hotline number: 082-883-9920

30 January 2020

Background: On the 31st December 2019, the World Health Organization (WHO) China country office reported a cluster of pneumonia cases in Wuhan City, Hubei Province of China. A novel coronavirus (2019-nCov) has been confirmed as the causative virus. Several other cities in China and other countries have also reported cases. Most cases to date have links to Wuhan but person-person spread has been described. For a list of countries where cases have been identified: https://www.cdc.gov/coronavirus/2019-ncov/locations-confirmed-cases.html

Clinical presentation and management of suspected cases

The main clinical signs and symptoms are fever and cough with a few patients presenting with difficulty in breathing and bilateral infiltrates on chest X-rays. Lymphopaenia may be present. Treatment is supportive. The differential for this syndrome is broad. Consider the possibility of influenza (Northern Hemisphere season ends in April or May) and bacterial pneumonia and manage accordingly.

Clinical and epidemiological criteria for Person Under Investigation (PUI)

Severe illness

Fever (≥38°C) and cough with pneumonia or Acute Respiratory Distress Syndrome (ARDS) (clinical/ radiological) requiring admission **AND** any of

1. A documented travel history to Wuhan, Hubei Province, China within 14 days before symptom onset; or
2. Close physical contact with a confirmed patient with 2019-nCoV while he/she is symptomatic*; or
3. Patient is a healthcare worker who was exposed to patients with severe acute respiratory infections unless another aetiology has been identified to explain the clinical presentation

or

Illness of any severity

A person with acute respiratory illness (ARI) of any degree of severity AND who within 14 days of onset of illness had been exposed to the following:

1. Close physical contact with a confirmed patient with 2019-nCoV while he/she is symptomatic*; or
2. Healthcare facility in a country where hospital-associated 2019-nCoV infections have been reported; or
3. Any direct contact with animal source in countries where 2019-nCoV is known or where human infections have occurred (due to the animal source remaining undetermined, guidance for this point will be updated)**; or
4. A documented travel history to Wuhan, Hubei Province, China within 14 days of symptom onset; and had visited an animal market in Wuhan City

*Close contact is defined as: healthcare-associated exposure, including providing direct care for nCoV patients, working with healthcare workers infected with nCoV, visiting patients or staying in the same close environment of a nCoV patient. This could also be defined as a healthcare worker working together in close proximity, sharing the same classroom environment with a nCoV patient, traveling together with nCoV patient in any kind of conveyance or living in the same household as a nCoV patient. ** To be added once/if animal source is identified as a source of infection.

Infection control

1. Early detection is key - health care workers should maintain a high level of clinical suspicion
2. Patients should be asked to wear a surgical mask as soon as they are identified and evaluated in a private room
3. Isolate PUI (ideally an airborne infection isolation room if available)
4. Use appropriate infection control for PUI
    a. Adequate standard precautions for all patients
    b. Add contact and droplet precautions for all patients
    c. Apply airborne precautions (eg N95 mask) and eye protection must be used when performing aerosol-generating procedures
    d. If available, airborne precautions can be used at all times
    e. Limit movement of patient (e.g. use designated portable X-ray equipment)

Specimen collection for 2019-nCoV

Collect appropriate samples. **Lower respiratory tract samples are preferred because the lower respiratory tract is the primary site of infection.**

- **Respiratory samples -** Combined nasopharyngeal and oropharyngeal swab in ambulatory patients and sputum (if produced) and/or tracheal aspirate or bronchoalveolar lavage in patients with more severe respiratory disease.
- **Serum for serological testing -** acute and convalescent samples may be submitted in addition to respiratory samples. Respiratory samples are the primary method if diagnosis.
- Use universal/viral transport medium for swabs; sterile container for sputum and aspirates; clotted blood container for serum-see page 2 for instructions for collecting swabs.

A single negative test result, especially if from upper respiratory tract specimen, does not exclude infection. Repeat sampling and testing of lower respiratory tract samples is recommended for case with severe disease or in whom 2019-nCoV is strongly suspected.

Case notification

All suspected cases who meet the case definition should be notified urgently to the district or provincial communicable disease co-ordinators (CDCCs) as per notifiable medical condition notification procedures. This is classified as Class 1 notifiable medical condition under "Respiratory Disease caused by a novel respiratory pathogen", therefore, notification should be made immediately on identification of a case meeting case definition of suspected infection with novel coronavirus, a cluster of cases with severe respiratory illness with evidence of common exposure or epidemiologic link, or on receipt of a laboratory diagnosis of the novel respiratory pathogen. More details can be found on http://www.nicd.ac.za/wp-content/uploads/2020/01/NMC-case-definitions-category-1_v5_January-2020.docx.pdf Furthermore, CDCCs are to contact the National Institute for Communicable Diseases (NICD) in return. In the event of a confirmed case, contact tracing will be conducted.

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COLLECTION OF NASO/OROPHARYNGEAL SWABS FOR DETECTION OF RESPIRATORY VIRUSES:

Respiratory viruses are best isolated from material that contains infected cells and secretions. Therefore, swabs should aim to brush cells and secretions off the mucous membranes of the upper respiratory tract. ***Good specimen quality*** (ie. containing sufficient cells and secretions), appropriate ***packaging and transport*** (i.e. to keep virus viable/detectable) is essential

Please discuss plans to collect samples with doctor on call before collecting sample at NICD hotline - 0828839920

Step 1: Equipment and materials

1. Specimen submission form **and** case investigation form
2. Nasopharyngeal (NP) and oropharyngeal (OP) flocked swab
3. Tube containing universal transport medium (UTM)
4. Tongue depressor
5. Gloves
6. N95 mask (fit tested)
7. Biohazard bag for disposal of non-sharp materials
8. Tissue for patient to wipe nose after sample collection
9. Cooler box and cooled ice packs
10. Ziploc plastic specimen bag

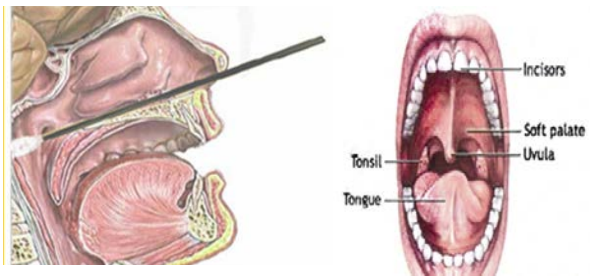
Step 2: Record keeping

1. Complete the specimen submission form **and** case investigation form (available on NICD website)
2. Place the specimen submission form into a ziplock bag
3. Label the tube of universal transport media (UTM) with the patient's name and date of birth

Step 3: Collection of nasopharyngeal swab (NPS)

1. Don a pair of gloves, and an N95 respirator, making sure the respirator has a good fit. Open a sterile flocked swab at the plastic shaft
2. Ask the patient to tilt his/her head back. Estimate the distance from the patient's nose to the ear: This is how far the swab should be inserted
3. Gently insert swab into the nostril and back (not upwards) to the nasopharynx until a slight resistance is met
4. Rotate swab 2-3 times and hold in place for 2-3 seconds
5. If resistance is met remove and try another nostril
6. Slowly withdraw swab and without touching it, put it into a UTM
7. Break plastic shaft at the break point line and close the tube

Diagram: How to collect a nasopharyngeal swab (left) and oropharyngeal swab (right)



Step 4: Collection of oropharyngeal swab (OPS)

1. Keeping the same pair of gloves on, and holding the UTM with the nasopharyngeal swab in, take a second flocked swab and open it at the plastic shaft
2. Ask the patient to tilt their head back and open mouth wide
3. Hold the tongue down with a tongue depressor
4. Have the patient say "aahh" to elevate the uvula
5. Swab each tonsil first, then the posterior pharynx in a "figure 8" movement
6. Avoid swabbing the soft palate and do not touch the tongue with the swab tip as this procedure can induce the gag reflex.
7. Place the swab into the same UTM tube with the NPS already in and break off the shaft at the break point line
8. Tightly close the tube
9. Place the closed tube with two swabs in the Ziploc
10. Remove gloves and N95 mask
11. Wash hands with soap and water

Step 5: Transport of specimens

1. Ensure the cooler box and ice packs stay at 2-8^{0}C
2. Transport to CRDM, NICD on same day as collection
3. Mark: Suspected Novel coronavirus, CRDM
   NHLS/NICD, Centre for Respiratory Disease and Meningitis (CRDM)
   Lower North Wing, SAVP building 1 Modderfontein Rd, Sandringham, Johannesburg, 2131
4. NHLS laboratories use usual overnight regional courier service
5. Private laboratories/clinics to organise shipment using existing systems, or contact CRDM for assistance if not available

Step 6: Contact details for additional assistance

Sample collection

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Sample transport

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