

27 January 2020

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

**Background:** On the 31<sup>st</sup> 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. Other cities in China as well as countries outside of China including, Japan, Italy, United States of America and Thailand have also reported cases. Most cases to date have links to Wuhan but person-person spread has been described.

## 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.

## Clinical and epidemiological criteria for Person Under Investigation (PUI)

### Severe illness

Fever ( $\geq 38^{\circ}\text{C}$ ) 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 of 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.*

## 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

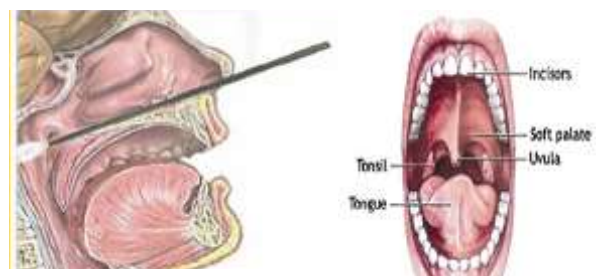
### Step 6: Contact details for assistance with sample transport

1. Linda de Gouveia lindad@nicd.ac.za (011-555-0327) or
2. Amelia Buys ameliab@nicd.ac.za (011-386-6373) or
3. Cardia Fourie cardiaf@nicd.ac.za (011-386-6373)

### 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

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



### Step 5: Transport of specimens

1. Ensure the cooler box and ice packs stay at 2-8°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 organise shipment via Marken [NHLS account] or World couriers [WHO shipment fund]