

10 March 2020

## 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 now known to be caused by a novel virus. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been confirmed as the causative virus of Coronavirus disease 2019 (COVID-19). Cases have now been identified in over 100 countries including South Africa. For a list of countries with local transmission click [here](#).

## 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 diagnosis for this syndrome is broad. Consider the possibility of influenza (Southern Hemisphere influenza season will begin in May or June) or bacterial pneumonia and manage accordingly.

## Criteria for Person Under Investigation (PUI)

Persons with acute respiratory illness with sudden onset of at least one of the following: cough, sore throat, shortness of breath or fever [ $\geq 38^{\circ}\text{C}$  (measured) or history of fever (subjective)] irrespective of admission status **AND**

In the 14 days prior to onset of symptoms, met at least one of the following epidemiological criteria:

- Were in close contact<sup>1</sup> with a confirmed<sup>2</sup> or probable<sup>3</sup> case of SARS-CoV-2 infection;
- OR
- Had a history of travel to areas with [local transmission of SARS-CoV-2](#); (NB Affected countries will change with time, consult the NICD website for current updates);
- OR
- Worked in, or attended a health care facility where patients with SARS-CoV-2 infections were being treated;
- OR
- Admitted with severe pneumonia of unknown aetiology

<sup>1</sup> Close contact: A person having had face-to-face contact or was in a closed environment with a COVID-19 case; this includes, amongst others, all persons living in the same household as a COVID-19 case and, people working closely in the same environment as a case. A healthcare worker or other person providing direct care for a COVID-19 case, while not wearing recommended personal protective equipment or PPE (e.g., gowns, gloves, NIOSH-certified disposable N95 respirator, eye protection). A contact in an aircraft sitting within two seats (in any direction) of the COVID-19 case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated. <sup>2</sup> Confirmed case: A person with laboratory confirmation of SARS-CoV-2 infection, irrespective of clinical signs and symptoms. <sup>3</sup> Probable case: A PUI for whom testing for SARS-CoV-2 is inconclusive (the result of the test reported by the laboratory) or for whom testing was positive on a pan-coronavirus assay.

## 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 PUI
  - c. Apply airborne precautions (e.g., 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 SARS-CoV-2 testing

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 swabs 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, if available; sterile container for sputum and aspirates; clotted blood container for serum-see page 2 for sample collection instructions.

*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 COVID-19 is strongly suspected.*

## Case notification

COVID-19 is classified as a Class 1 notifiable medical condition under "Respiratory disease caused by a novel respiratory pathogen", therefore, notification should be made immediately to the district or provincial communicable disease co-ordinators (CDCCs) on identification of a person meeting the definition for person under investigation (PUI) for COVID-19, 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 (SARS-CoV-2) as per notifiable medical condition notification procedures. More details can be found [here](#). Furthermore, district or provincial CDCCs are to notify the National Institute for Communicable Diseases (NICD). In the event of a confirmed case, contact tracing will be conducted.

## 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) and appropriate **packaging and transport** (i.e., to keep virus viable/detectable) **are essential**. **Please discuss plans to collect samples with doctor on call before collecting sample at NICD hotline – 0828839920|0665624021**

### Step 1: Equipment and materials

1. Specimen submission form **and** person under investigation (PUI) form
2. Nasopharyngeal (NP) & oropharyngeal (OP) flocked swabs
3. Tube containing universal transport medium (UTM), if UTM unavailable may use gel or send dry in sterile tube
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

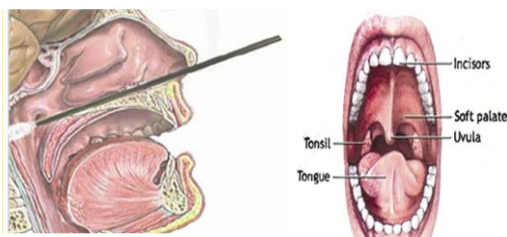
### Step 2: Record keeping

1. Complete the specimen submission form **and** person under investigation (PUI) form (see NICD website)
2. Place specimen submission and PUI form into a Ziploc bag
3. Label the tube of universal transport media (UTM) with the patient's name and date of birth and sample type

### 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 before fully inserted, remove and try the other nostril
6. Slowly withdraw swab and put it into the specimen container
7. Break plastic shaft at the break point line and close the

**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
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°C
2. Transport to CRDM, NICD on same day as collection
3. Mark: "Suspected COVID-19, CRDM NHLS/NICD, Centre for Respiratory Diseases 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 shipment system is not available

### Step 6: Contact details for additional assistance

#### Sample collection

Sibongile Walaza sibongilew@nicd.ac.za 011-386-6410

#### Sample transport

Linda de Gouveia lindad@nicd.ac.za 011-555-0327

Amelia Buys ameliab@nicd.ac.za 011-386-6373

Cardia Fourie cardiaf@nicd.ac.za 011-386-6373