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 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 and WHO has declared a global pandemic.

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. Lymphopenia 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), bacterial pneumonia, tuberculosis, Pneumocystis jirovecii (PCP) if immunosuppressed, and manage accordingly.

Criteria for person under investigation (PUI), i.e. a person to be tested for COVID-19
Persons with acute respiratory illness with sudden onset of at least one of the following: cough, sore throat, shortness of breath or fever [≥ 38°C (measured) or history of fever (subjective)] irrespective of admission status.

Characteristics of persons at highest risk
Persons at a highest risk are those who have an acute respiratory illness and who, in the 14 days prior to onset of symptoms, met at least one of the following epidemiological criteria:

- Were in close contact1 with a confirmed2 or probable3 case of SARS-CoV-2 infection;
- Had a history of travel to areas with local transmission of SARS-CoV-2; (NB Affected countries will change with time, consult NICD website for current updates);
- Worked in, or attended a health care facility where patients with SARS-CoV-2 infections were being treated;
- Admitted with severe pneumonia of unknown aetiology.

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.

- 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.
- Use universal/viral transport medium for swabs, if available; sterile container for sputum and aspirates; 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.

Infection prevention and control (IPC)
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 once identified and be evaluated in a private room
3. Isolate PUI
4. Use appropriate infection control for PUI
   a. Standard precautions for all patients
   b. Add contact and droplet precautions for all PUI
   c. 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 patient movement (e.g., portable X-ray)

Case notification
COVID-19 is classified as a Class 1 notifiable medical condition. 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 COVID-19. More details can be found [here](#). District or provincial
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** (i.e. containing sufficient cells and secretions) and appropriate **packaging and transport** (i.e., to keep virus viable/detectable) are essential.

**Step 1: Equipment and materials**
1. Complete specimen submission form **and** person under investigation (PUI) form **and** contact line list found [here](#)
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, N95 respiratory (or surgical mask if unavailable) and eye protection
6. Tissue for the patient to use after sample collection
7. Biohazard bag for disposal of non-sharp materials
8. Cooler box and cooled ice packs
9. Ziploc plastic specimen bag

**Step 2: Record keeping**
1. Complete the specimen submission form **and** person under investigation (PUI) form **and** contact line list
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 gloves, respirator or mask, and eye protection
2. Open a sterile flocked swab at the plastic shaft
3. Ask the patient to tilt his/her head back. Estimate the distance from the patient’s nose to the ear.
4. Gently insert swab **into the nostril** and back (not upwards) to the nasopharynx until a slight resistance is met
5. Rotate swab 2-3 times and hold in place for 2-3 seconds
6. If resistance is met before fully inserted, remove and try the other nostril
7. Slowly withdraw the swab and put it into the specimen container
8. Break plastic shaft at the break point line & close the tube

**Step 4: Collection of oropharyngeal swab (OPS)**
1. Wearing gloves, respirator or mask, and eye protection, and holding the UTM with the nasopharyngeal swab in, open a second flocked swab for OPS collection
2. Ask the patient to tilt their head back and mouth open
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 or the tongue with the swab tip as this 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 bag
10. Remove gloves, respiratory or mask, and eye protection and wash hands thoroughly

**Step 5: Transport of specimens**
1. Ensure the cooler box and ice packs stay at 2-8°C
2. Transport to NHLS or private laboratory on the day of specimen collection
3. Contact NHLS laboratories as below for shipping instructions or contact private laboratories directly
4. If shipping to NICD (for reference testing), mark: “Suspected COVID-19, NHLS/NICD, Centre for Respiratory Diseases and Meningitis (CRDM), Lower North Wing, SAVP building 1 Modderfontein Rd, Sandringham, Johannesburg, 2131”.
5. NHLS laboratories use usual overnight regional courier service; private labs will ship via existing systems

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

**Step 6: NHLS laboratory contact details**

**Eastern Cape Province:**
Dora Nginza Virology Lab  
Dr Howard Newman  
0413956152

**Free State Province:**
Universitas Virology  
After hours ask for virologist on call  
051 405 3033

**Gauteng Province:**
Charlotte Maxeke Laboratory  
Prof Sim Mayaphi  
012 319 2351  
DGM Virology Laboratory  
Dr Temitayo Famoroti  
012 521 4398

**KwaZulu Natal Province:**
Inkosi Albert Luthuli Academic Hospital Virology  
Dr Khanyisile Msomi  
031 240 2791/4

**Northern Cape Province:**
Universitas Virology  
After hours ask for virologist on call  
051 405 3162  
051 405 3033

**Western Cape Province:**
Tygerberg Virology  
021 938 4330/4934  
Groote Schuur Hospital Virology  
021 404 4129/3091

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Version 11, 2 April 2020