

2019 Novel Coronavirus (2019-nCoV)

Guidelines for case-finding, diagnosis, management and public health response in South Africa

Compiled by

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correct. Implementation of any aspect of these guidelines remains the responsibility of the implementing agency in so far as public health liability resides, or the responsibility of the individual clinician in the case of diagnosis or treatment.

Quick Reference Guide – 2019-nCoV

Criteria for person under investigation (PUI) (Page 7):

Patients with acute respiratory infection (sudden onset of at least one of the following: cough, sore throat, shortness of breath) requiring hospitalisation or not

AND

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

- Were in close contact* with a confirmed or probable case of 2019-nCoV infection;
- OR**
- Had a history of travel to areas with presumed ongoing community transmission of 2019-nCoV; i.e. China
- OR**
- Worked in or attended a health care facility where patients with 2019-nCoV infections were being treated.

** Close contact: A person having had face-to-face contact (≤ 2 metres) or was in a closed environment with a 2019-nCoV case; this includes, amongst others, all persons living in the same household as a 2019-nCoV case and, people working closely in the same environment as a case. A healthcare worker or other person providing direct care for a 2019-nCoV 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 2019-nCoV case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated.*

Clinicians should also be vigilant for the possibility of atypical clinical presentations among immunocompromised patients. Consider the possibility of influenza (Northern Hemisphere season ends in April or May) and bacterial pneumonia and manage accordingly.

Infection control: Page 8

Mode of transmission is unclear at present but is typically respiratory droplet for other human coronaviruses.

Airborne precautions are preferred where possible.

1. Early detection is key - healthcare 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 should be used at all times
 - e. Limit movement of patient (e.g. use designated portable X-ray equipment)

Laboratory diagnosis and specimen collection for 2019-nCoV Page 10-13, 21-23)

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 and/or tracheal aspirate or bronchoalveolar lavage in patients with more severe respiratory disease. Respiratory samples are the primary method of diagnosis.
- **Serum for serological testing** - acute and convalescent samples should be submitted in addition to respiratory samples.
- Place swabs together in universal transport medium, sputum and aspirates in a universal container and clotted tube for serum
- Complete case investigation form (Appendix 8) and specimen submission form (Appendix 7)
- Transport samples at 2-8°C (in cooler box with ice packs)
- Alert NICD Hotline +27 82 883 9920

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 cases with severe disease or in whom 2019-nCoV is strongly suspected.

Notification of cases and additional support: Appendix 4

- All PUI should be notified to the district provincial communicable disease coordinator as per notifiable medical condition procedures (see Appendix 4 and 11 for contact details), or the NICD <http://www.nicd.ac.za/notifiable-medical-conditions/>
- Clinicians should discuss the case with doctor on call before collecting and sending specimens for testing at **NICD Hot line: +27 82 883 9920**
- 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 novel respiratory pathogen. Information available at <http://www.nicd.ac.za/notifiable-medical-conditions/>

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1 Introduction

On the 31 December 2019, the World Health Organization (WHO) China country office reported a cluster of pneumonia cases in Wuhan, Hubei Province of China. On 7 January 2020, the causative pathogen was identified as a novel coronavirus (2019-nCoV). Initially person-to-person transmission was not apparent and the majority of the cases were epidemiologically linked to a seafood, poultry and live wildlife market (Huanan Seafood Wholesale Market) in Jiangnan District of Hubei Province. However, the number of cases continued to increase rapidly, and evidence of person-to-person transmission mounted in travellers diagnosed with 2019-nCoV who had visited Wuhan.

The WHO International Health Regulations Emergency Committee declared that the outbreak of 2019-nCoV meets the criteria for a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 ([https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov))). The WHO assessment of the risk of this event is: very high in China and high at the regional and global level. The daily WHO situation update can be found at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>.

In the light of the transmissibility of coronaviruses, and the global experience with MERS-CoV (ongoing) and SARS in 2003 which were also caused by coronaviruses, South African authorities have compiled this guideline document to support surveillance, case finding, diagnosis, management and public health responses to cases under investigation.

THIS SITUATION IS RAPIDLY EVOLVING

BEFORE USING THIS DOCUMENT PLEASE CHECK FOR UPDATES ON THE NICD AND NDOH WEBSITES (www.nicd.ac.za and www.ndoh.gov.za)

**OR CALL YOUR PROVINCIAL COMMUNICABLE DISEASE CO-ORDINATOR
(See Appendix 13 for contact details)**

2 Microbiology and epidemiology

Coronaviruses are enveloped, single-stranded positive-sense RNA viruses. The envelope of the coronaviruses is covered with club-shaped glycoproteins which look like ‘crowns’, or ‘halos’ – hence the name ‘coronavirus.’ Coronaviruses are responsible for the common cold, and usually cause self-limited upper respiratory tract infections. However, in 2003, a new coronavirus emerged leading to the SARS (severe acute respiratory syndrome) outbreak. In 2012, the Middle East respiratory syndrome (MERS) was found to be caused by a coronavirus associated with transmission from camels. Both viruses had a range of clinical presentations from mild upper respiratory tract symptoms and possibly asymptomatic infection, to severe acute respiratory syndrome leading to sepsis, multi-organ failure and death in a sizeable proportion of cases.

Following the identification of a cluster of pneumonia cases in Wuhan, Hubei Province of China, Chinese authorities reported on 7 January 2020 that the causative pathogen was identified as a novel coronavirus (2019-nCoV). The gene sequences were deposited in Genbank, the NIH genetic sequence database, and in the Global Initiative on Sharing All Influenza Data (GISAID) portal.

Available evidence, and experience from MERS-CoV and SARS suggests that the novel coronavirus has a possible zoonotic origin. However, human-to-human transmission of 2019-nCoV is now confirmed. As of 30 January 2020, 7,818 confirmed cases have been reported to WHO, of which 7,736 (98.9%) have been detected in China and China special territories, including Hong Kong SAR (10 cases), Macau SAR (7 cases), and Taipei (7 cases). The remaining 82 cases have been reported from 18 other countries in the following WHO Regions: Western Pacific: 8 (Japan, Republic of Korea, Viet Nam, Singapore, Australia, Malaysia, Cambodia and Philippines); South-East Asia: 4 (Thailand, Nepal, Sri Lanka and India); Region of the Americas: 2 (Canada and the United States of America), European Region: 3 (France, Finland and Germany); and Eastern Mediterranean: 1 (United Arab Emirates). The daily WHO situation update can be found at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/>

There is currently limited epidemiologic data available of the ages and characteristics of affected cases. However, epidemiologists and clinicians are accumulating data as new cases are diagnosed. As for the 87 cases identified outside of China (until 30 January 2020), the median age was 45 years (range 2-74 years) and 71% were male. Of the 87 cases identified outside of China, only 7 had no history of travel in China. There has been human-to-human transmission in 3 countries outside China. The median age of the first 425 cases identified in China was 59 years and 56% were males. The median incubation period was 5.2 days. Early estimates of transmission parameters are as follows (obtained from the first 425 confirmed cases): mean serial interval 7.5 (95%CI: 5.3-19) days and basic reproductive number 2.2 (95%CI: 1.4-3.9).

3 Clinical presentation and management

A minority, but not negligible proportion of patients have had acute, serious respiratory illness with fever, cough, shortness of breath, and breathing difficulties. As of 30 January 2020, of the 7,736 cases confirmed in China, 1,370 (17.7%) were severe and 170 were fatal (2.2%). Severity of illness was defined according to any of the following criteria: (i) shortness of breath; (ii) respiratory rate >30 bpm in an adult; (iii) hypoxemia; and (iv) chest X-ray with multi-lobar infiltrates or pulmonary infiltration progressing >50% within 24-48 hours. Because investigations initially focused on severe cases the severity of the infection may be overestimated among the currently known confirmed cases. Current estimates of the incubation period of the virus range from 2 to 10 days.

The clinical features of 41 severe cases initially detected in China have been described in detail. These patients were hospitalized in a dedicated hospital in Wuhan city. 73% were men, the median age was 49 years (IQR: 41-58 years) and 66% had been exposed to Huanan seafood market. 32% had underlying medical conditions, including diabetes (20%), hypertension (15%) and cardiovascular disease (15%). Common symptoms at onset included fever (98%), cough (76%) and myalgia or fatigue (44%). Less common symptoms were headache (8%), haemoptysis (5%) and diarrhoea (3%). Dyspnoea developed in 22% of patients. The median time of dyspnoea development was 8 days (IQR: 0-13 days). 63% of patients had lymphopenia and all patients had pneumonia with abnormal findings on chest X-ray. Complications included acute respiratory distress syndrome (29%) and acute cardiac injury (19%). 32% of patients were admitted to an ICU and 15% died. More clinical information is expected to emerge if cases increase, especially among patients with mild clinical presentation.

There is no specific treatment for disease caused by coronavirus infection. However, many of the symptoms caused by coronavirus infections can be treated and therefore treatment should be supportive, and based on patient symptoms. There is early evidence that some medications used to treat HIV (lopinavir, ritonavir) may benefit patients with 2019-nCoV infection but further data are needed. The WHO interim clinical care guidance can be found at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>.

4 Surveillance and case definitions for 2019-nCoV

4.1 Rationale for surveillance for 2019-nCoV

Surveillance for 2019-nCoV is essential to permit early recognition of suspected cases, early diagnosis, containment and prevention of further cases.

Surveillance should be conducted by all clinicians and health facilities. Staff should be aware of the surveillance case definitions, and implement routine screening where appropriate (e.g. on returning travellers from affected areas).

4.2 Who should be tested for 2019-nCoV?

Presently, persons who should undergo testing for 2019-nCoV have identifiable factors as described below.

Surveillance case definitions for persons under investigation (PUI) who should be tested for 2019-nCoV

Patients with acute respiratory infection (sudden onset of at least one of the following: fever, cough, sore throat, shortness of breath) requiring hospitalisation or not

AND

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

- Were in close contact with a confirmed or probable case of 2019-nCoV infection;

OR

- Had a history of travel to areas with presumed [ongoing community transmission of 2019-nCoV](#); i.e. China

OR

- Worked in or attended a healthcare facility where patients with 2019-nCoV infections were being treated.

A confirmed case: is a person with a laboratory-confirmation of infection with the 2019-nCoV.

A close contact is defined in section 7.3. (contact tracing)

5 Infection control

Ongoing investigations are needed to more fully understand the transmissibility of nCov-2019, but person-to-person spread is occurring and person-to-person and nosocomial transmission was common with MERS-CoV and SARS. Triage, early recognition and isolation of patients with suspected 2019-nCoV is essential to prevent or limit transmission in healthcare settings.

Based on currently available data, symptomatic cases seem to be the main driver of transmission. WHO is aware of possible transmission of 2019-nCoV from infected people prior to developing symptoms. Further information is needed to better understand how transmission may have occurred in these few instances. Transmission from an asymptomatic person is very rare with other coronaviruses. Persons who are symptomatic will spread the virus more readily through coughing and sneezing.

- Standard infection-control measures should be applied for all patients with symptoms of acute respiratory infection including:
 - hand and respiratory hygiene
 - use of appropriate personal protective equipment
 - environmental and disinfection procedures should be applied
- For PUI:
 - place a surgical/medical mask over the patients' nose and mouth and evaluate in a private room with the door closed.
 - implement additional contact and droplet precautions
 - use airborne precautions (eg. N95 mask) and eye protection when performing aerosol-generating procedures.
 - if available, airborne precautions should be used at all times.

Healthcare workers are advised to refer to the WHO interim guidance on infection prevention and control during health care for suspected cases of 2019-nCoV. This can be accessed on the WHO website: https://www.who.int/docs/default-source/coronaviruse/20200126-ncov-ipc-during-health-care.pdf?sfvrsn=69e588ce_1&download=true and will be updated as additional information becomes available.

Key contact and droplet precautions include the following:

- isolate the patient (ideally an airborne infection isolation room if available, otherwise adequately ventilated single rooms)
- place patient in a separate room
- healthcare workers to use a medical (surgical/medical) mask and eye (goggles) or facial protection (face shield)
- healthcare workers should wear a clean, non-sterile, long-sleeved gown and use gloves

- healthcare workers should not touch their eyes, nose or mouth with potentially contaminated gloves or bare hands
- limit movement of patient (eg. use designated portable X-ray equipment)
- routinely clean and disinfect surfaces with which the patient is in contact
- limit the number of healthcare workers, family and visitors in contact with suspected or confirmed cases

Additional precautions to be used during aerosol-generating procedures include:

- performing procedures in an adequately ventilated room
- minimising respirator face-seal leakage to fully protect the worker from exposure to aerosolized infectious droplets when using particulate respirators e.g. N95 mask
- eye protection (goggles or face shield) to protect the eyes from respiratory splash or spray
- contact protection (non-sterile, long-sleeved gown and gloves)

Patients with suspected 2019-nCoV infection cared for in the home environment

Given the limited knowledge of the disease caused by and transmission of 2019-nCoV, WHO currently recommends that suspected cases of 2019-nCoV infection should be isolated and monitored in a hospital setting. However, under certain circumstances, patients with suspected 2019-nCoV infection with mild symptoms and no underlying or immunocompromising conditions may be cared for/isolated in the home environment.

Guidelines to minimise exposure of household contact are available on the WHO website

[https://www.who.int/publications-detail/home-care-for-patients-with-suspected-novel-coronavirus-\(ncov\)-infection-presenting-with-mild-symptoms-and-management-of-contacts](https://www.who.int/publications-detail/home-care-for-patients-with-suspected-novel-coronavirus-(ncov)-infection-presenting-with-mild-symptoms-and-management-of-contacts)

6 Laboratory diagnosis

6.1 Who should be tested

Only PUI for 2019-nCoV should be tested. Rapid collection, transport and testing of appropriate specimens from PUI is a priority. Patients should be managed as potentially infected when the clinical and epidemiological data strongly suggest 2019-nCoV infection.

Clinical specimens should be collected as soon as possible after onset of symptoms, ideally within 7 days. If patient presents ≥ 7 days from symptom onset and is still symptomatic, respiratory samples, especially lower respiratory samples and a serum sample should still be collected.

6.2 What investigations should be done

- From the moment that 2019-nCoV is considered as a diagnostic possibility, patients under investigation should be isolated, and infection control measures as described above should be implemented.
- For PUI, appropriate specimens should be collected and transported urgently (same day as collection) for 2019-nCoV testing.
- PUI with severe illness should also undergo routinely available laboratory tests as clinically indicated according to local management guidelines for community-acquired pneumonia to determine the presence of other potential primary aetiologies of pneumonia (e.g. *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Mycoplasma pneumoniae*, *Legionella pneumophila*,

Mycobacterium tuberculosis and respiratory viruses including influenza, and respiratory syncytial virus (RSV)). These investigations include at least the following

- Full blood count
- Blood cultures
- Lower respiratory tract specimens
- Nasopharyngeal swabs or aspirates and oropharyngeal swabs for detection of viral and atypical pathogens
- Chest radiography
- Sputum for *Mycobacterium tuberculosis* microscopy and/or molecular detection
- As the role of co-infections is not yet clearly understood, identification of a conventional respiratory pathogen does not rule out 2019-nCoV infection.

6.3 Specimen collection and transport

- Infection prevention and control guidelines, including adequate PPE, must be followed during specimen collection, and all specimens handled as potentially infectious.
- **Lower respiratory tract samples are the preferred specimen type because the lower respiratory tract is the primary site of infection** and they are likely to contain the highest viral loads (based on experience with MERS-CoV) and therefore have a better yield. However, collection of all three specimen types (lower respiratory, upper respiratory and serum) for 2019-nCoV testing is recommended (Table 1):
 1. Upper respiratory tract specimens - combined nasopharyngeal (NP) and oropharyngeal (OP) swabs in universal transport medium (UTM). Nasopharyngeal swabs must be collected from the nasopharynx and not from the nostril (See appendix 5 on how to collect NP and OP sample). Nasopharyngeal and oropharyngeal swabs should be placed together in the same UTM tube.
 2. Lower respiratory tract specimens (hospitalised/severe cases) – sputum (expectorated or induced), bronchoalveolar lavage, endotracheal aspirate
 3. Serum - Paired serum samples should be collected; acute (first week of illness) and convalescent (3-4 weeks). Serological testing, in addition to respiratory samples, may support the diagnosis of 2019-nCoV once serologic tests become available.
- Specimens must be shipped by trained personnel according to the international regulations for the transport of dangerous goods (infectious substances), Category B. See Table 1 for specimen transport conditions.
- Appendix 6 describes detailed procedures for submission of specimens to NICD for patients under investigation.
- **A completed specimen submission form (Appendix 7) must be submitted to the laboratory together with specimens for 2019-nCoV testing.**

Table 1 lists the type of specimens that can be collected for testing for 2019-nCoV.

Table 1. Type of specimens that can be collected for 2019-nCoV diagnostics and the transport requirements of these specimens

Specimen type	Collection materials	Storage and transportation	Dangerous goods shipping category	Comment
FOR SYMPTOMATIC PATIENTS:				
Sputum*	Deep cough sputum in sterile leak proof container	Refrigerate and ship at 2-8 °C up to 48 hrs, if >48 hrs freeze at -70°C and ship on dry ice	Biological substance, Category B	The preferred sample but need to ensure the material is from the lower respiratory tract
Bronchoalveolar lavage*	2-3 ml in sterile leak proof container	Refrigerate and ship at 2-8 °C up to 48 hrs, if >48 hrs freeze at -70°C and ship on dry ice	Biological substance, Category B	There may be some dilution of virus but still a worthwhile specimen
(Endo)tracheal or nasopharyngeal aspirate*	2-3 ml in sterile leak proof container	Refrigerate and ship at 2-8 °C up to 48 hrs, if >48 hrs freeze at -70°C and ship on dry ice	Biological substance, Category B	
Nasopharyngeal and oropharyngeal swab	Dacron or nylon flocked swab in Universal Transport Medium (UTM) in a sterile leak proof container	Refrigerate at 2-8 °C up to 5 days, if >5 days freeze at -70°C and ship on dry ice	Biological substance, Category B	Nasopharyngeal and oropharyngeal swabs should be placed in the same tube to increase the viral load
Serum	Serum separator tube**	Store upright for at least 30 minutes after collection. a Refrigerate and ship at 2-8 °C within 5 days	Biological substance, Category B	Collect paired samples: <ul style="list-style-type: none"> • Acute – first week of illness • Convalescent – 3-4 weeks later
Lung tissue from biopsy or autopsy	Sterile container with saline	Refrigerate and ship at 2-8 °C up to 24 hrs, if >24 hrs freeze at -70°C and ship on dry ice		

* Aerosol-generating procedures may pose an infection risk for health care workers. ** Children and adults: collect 1 tube (5-10 ml) of whole blood in a serum separator tube. Infant: a minimum of 1 ml in a serum separator tube.

6.4 Laboratory diagnostic assays and interpretation of results

Routine confirmation of cases of 2019-nCoV infection is based on amplification and detection of unique 2019-nCoV viral nucleic acid sequences by real-time reverse-transcription polymerase chain reaction (rRT-PCR), with confirmation by nucleic acid sequencing when necessary.¹

Currently, the NICD offers testing for 2019-nCoV using the Charite Institute rRT-PCR assay. The protocol for testing is based on a method described by Corman *et al*, 2020.² The testing laboratory must adhere to appropriate biosafety practices and tests must be performed by trained staff. Molecular testing should be conducted in an enhanced BSL2 laboratory and viral culture in a BSL3 laboratory.

A negative result does not rule out the possibility of a 2019-nCoV infection. A number of factors could lead to a false –negative result including:

¹ World Health Organization. Laboratory testing for 2019 novel coronavirus (2019-nCoV) in suspected human cases Interim guidance 14 January 2020 [cited 30 January 2020] https://www.who.int/docs/default-source/coronaviruse/20200114-interim-laboratory-guidance-version.pdf?sfvrsn=6967c39b_4&download=true

² Corman, V. *et al.*, Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. *Euro Surveill.* 2020;25(3):pii=2000045. <https://doi.org/10.2807/1560-7917.ES.2020.25.3.2000045>

- Poor specimen quality
- The specimen was collected late or very early in the illness
- The specimen was not handled and shipped appropriately, e.g the cold chain of specimens was not properly maintained throughout the process i.e from the point of collection up until receipt and processing
- Technical reasons inherent in the test, e.g virus mutation or PCR inhibition.

If negative results are obtained from patients with a high index of suspicion for 2019-nCoV infection, especially when only upper respiratory tract samples were collected, additional specimens, including lower respiratory samples should be collected and tested.

Figure 1 illustrates the laboratory algorithm followed for testing of specimens collected from a suspected 2019-nCoV case.

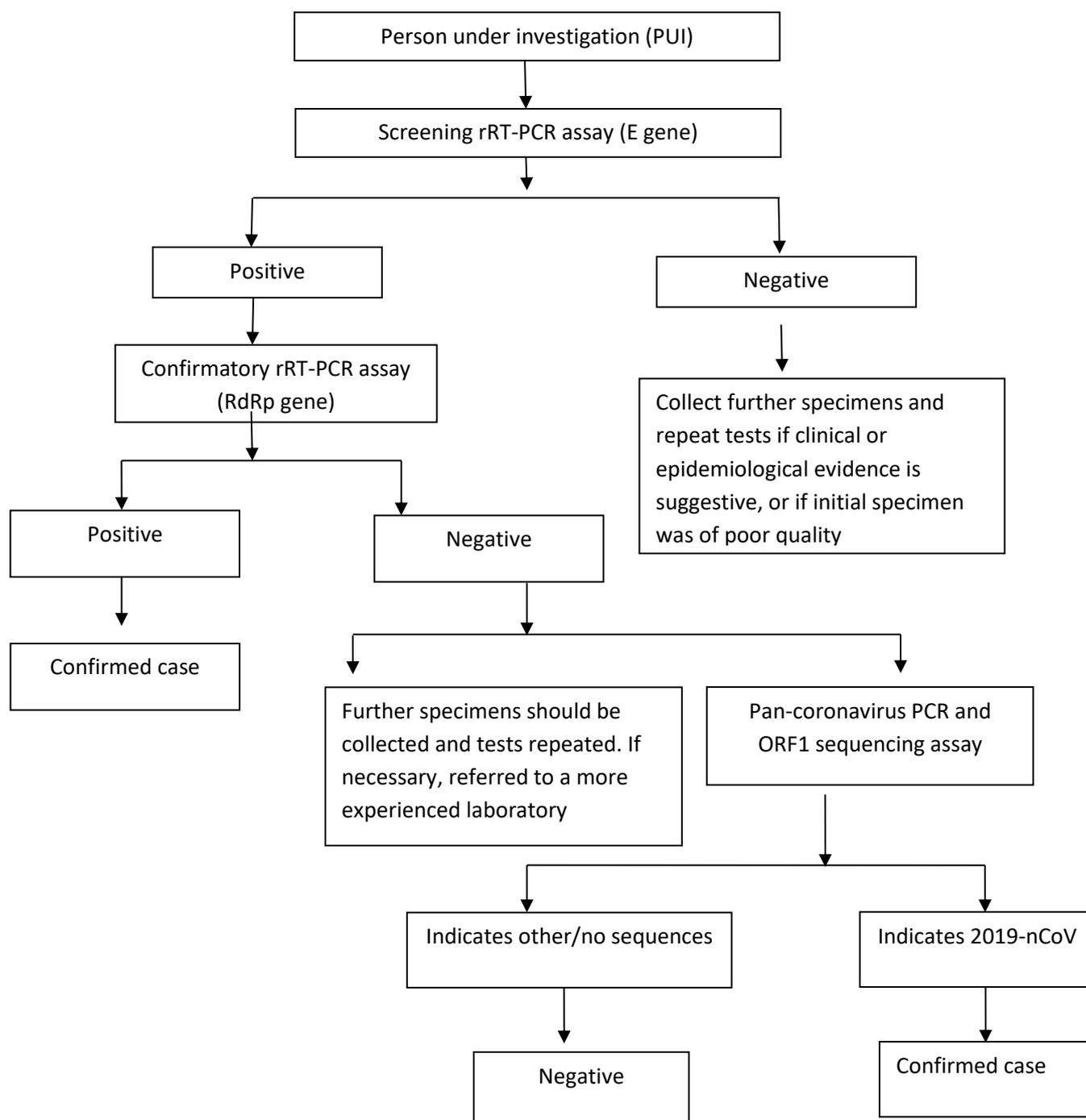


Figure 1: Algorithm for testing persons under investigation for 2019-nCoV by rRT-PCR and sequencing

The laboratory turnaround time (TAT) for 2019-nCoV testing is 24 hours from time of specimen receipt in the NICD laboratory.

Where possible, a specimen that tests positive for 2019-nCoV will be further characterised by viral culture and whole genome sequencing.

7 Public health response

The detection of a case of 2019-nCoV constitutes a public health emergency and a risk to the safety of the patient, their contacts including health care workers, and more broadly, the wellbeing of the South African community. Even at the time the decision is made to test a patient for 2019-nCoV, consideration must be made of the public health response.

The South African National Department of Health, the NICD and provincial health departments have structures for responding to outbreaks of communicable diseases, and these have been activated to assist with preparedness activities.

7.1 Response to a suspected case

See flow diagram in appendix 1, 2 and 4 for management of PUI.

7.2 Response to a confirmed case

- Any person who has had close contact with a confirmed case while the confirmed case was ill or in the 7 days preceding illness onset should be carefully monitored (at home) for the appearance of respiratory symptoms.
- If symptoms develop within the first 14 days following the contact, the individual should be considered a PUI regardless of the severity of illness and investigated accordingly.
- Close contacts who are ill and do not require hospitalisation for medical reasons may be cared for and isolated in their home while being evaluated for 2019-nCoV infection. (Isolation is defined as the separation or restriction of activities of an ill person with a contagious disease from those who are well).

7.3 Contact tracing

- A flow diagram for contact tracing is in Appendix 3. A contact line list (Appendix 9) should be completed for each person under investigation at time of sample collection and completion of the investigation form by the facility infection control focal point, attending clinician or designated port health officer. If the form cannot be completed at this time, the district or provincial CDC will complete the form when notified of the case. A copy of this form should be submitted to ncov@nicd.ac.za.
- Details of close contacts within 7 days prior to symptom onset will be collected on the contact line list.
- A close contact is defined as:

- A person having had face-to-face contact (≤ 2 metres) or was in a closed environment with a 2019-nCoV case; this includes, amongst others, all persons living in the same household as a 2019-nCoV case and, people working closely in the same environment as a case,
 - A healthcare worker or other person providing direct care for a 2019-nCoV 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 2019-nCoV case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated [1] (if severity of symptoms or movement of the case indicate more extensive exposure, passengers seated in the entire section or all passengers on the aircraft may be considered close contacts).
- If laboratory testing confirms 2019-nCoV infection, the provincial CDCC will be requested to use the contact line list to call each contact to complete the contact demographic section on the contact monitoring form. Once details are completed, forms are to be emailed to ncov@nicd.ac.za
 - Forms will be captured on the 2019-nCoV contact database at NICD.
 - A thermometer will be issued to each contact if they do not have one. Close contacts will be asked to self-quarantine themselves at home for 14 days since exposure to the confirmed 2019-nCoV case.
 - Close contacts will be monitored telephonically by the NICD call centre personnel for 14 days post last exposure to the confirmed case using the symptom monitoring tool (Appendix 10) and captured directly to the database. If at any point during the monitoring period the contact becomes unreachable for more than 24 hours, the provincial CDCC team will do a home visit. For contacts who are not able to perform daily temperature measurements at home, daily home visits will be conducted by provincial CDCC team.
 - Monitoring of close contacts may switch from telephonic monitoring to self-monitoring dependant on the number of contacts to be followed up.
 - Close contacts under monitoring should be advised to:
 - Remain at home (NICD will provide an official letter for employment or education facilities)
 - Avoid unnecessary social contact
 - Avoid travel
 - Remain reachable for monitoring
 - Should a contact develop symptoms, the provincial CDCC should be informed by NICD. Arrangements will be made for a health care worker to visit the patient in their home on the same day to collect a specimen and to complete the required documentation. Appropriate PPE should be used (e.g., gowns, gloves, NIOSH-certified disposable N95 respirator, eye protection). If a healthcare worker is not available, the patient will be requested to visit their nearest healthcare facility to have a specimen collected.

- The CDCC should inform the healthcare facility of the incoming patient in order for the healthcare facility to use appropriate infection prevention and control (IPC) measures.
- Monitoring of close contacts may switch from telephonic monitoring to self-monitoring dependant on the number of contacts to be followed up.
- Individuals not meeting the definition of a close contact but with possible exposure should be informed to contact their healthcare practitioner if any symptoms develop within 14 days since exposure to the confirmed 2019-nCoV case.

Healthcare workers with occupational exposure

- Lists of healthcare workers with occupation exposure should be compiled by the health facility
- They should be actively monitored for symptoms and rapidly isolated and tested should symptoms develop

7.3.1 Data management

All contact line lists and symptom monitoring forms with completed demographic information should be forwarded to ncov@nicd.ac.za for capturing at NICD. Symptom monitoring should be captured directly to database, by NICD call-centre personnel.

7.4 Management of the deceased

- All attempts should be made to confirm the diagnosis in persons who are close contacts who die. Post mortem nasopharyngeal swabs, and if possible, bronchial washings may be taken.

7.5 Quarantine

Quarantine entails separating **asymptomatic** individuals potentially exposed to a disease from non-exposed individuals. Quarantine is to be distinguished from isolation, which is the act of separating a **sick** individual with a contagious disease from healthy individuals without that contagious disease. Quarantine procedures can be effective in limiting and slowing the introduction of a novel pathogen into a population, but may entail the use of considerable resources and may infringe on the rights of members of society. Quarantine may be voluntary (e.g. asking contacts of infectious cases to stay at home for 14 days) or involuntary (i.e. using legal powers to enforce quarantine against a person's will). Quarantine may take place in the home (e.g. asking contacts of infectious cases to stay at home for 14 days) or in a designated facility. Depending on level of risk of the exposure different levels of quarantine will be employed, for an example if a person comes back from Wuhan, voluntary quarantine at home will be recommended. Whereas, if health worker not worrying appropriate PEP is exposed to a confirmed case, the health worker would be allowed to work and self-quarantine after hours. Quarantine may be applied at the individual level or to a group or community of exposed persons. Asymptomatic contacts will be voluntarily quarantined at home.

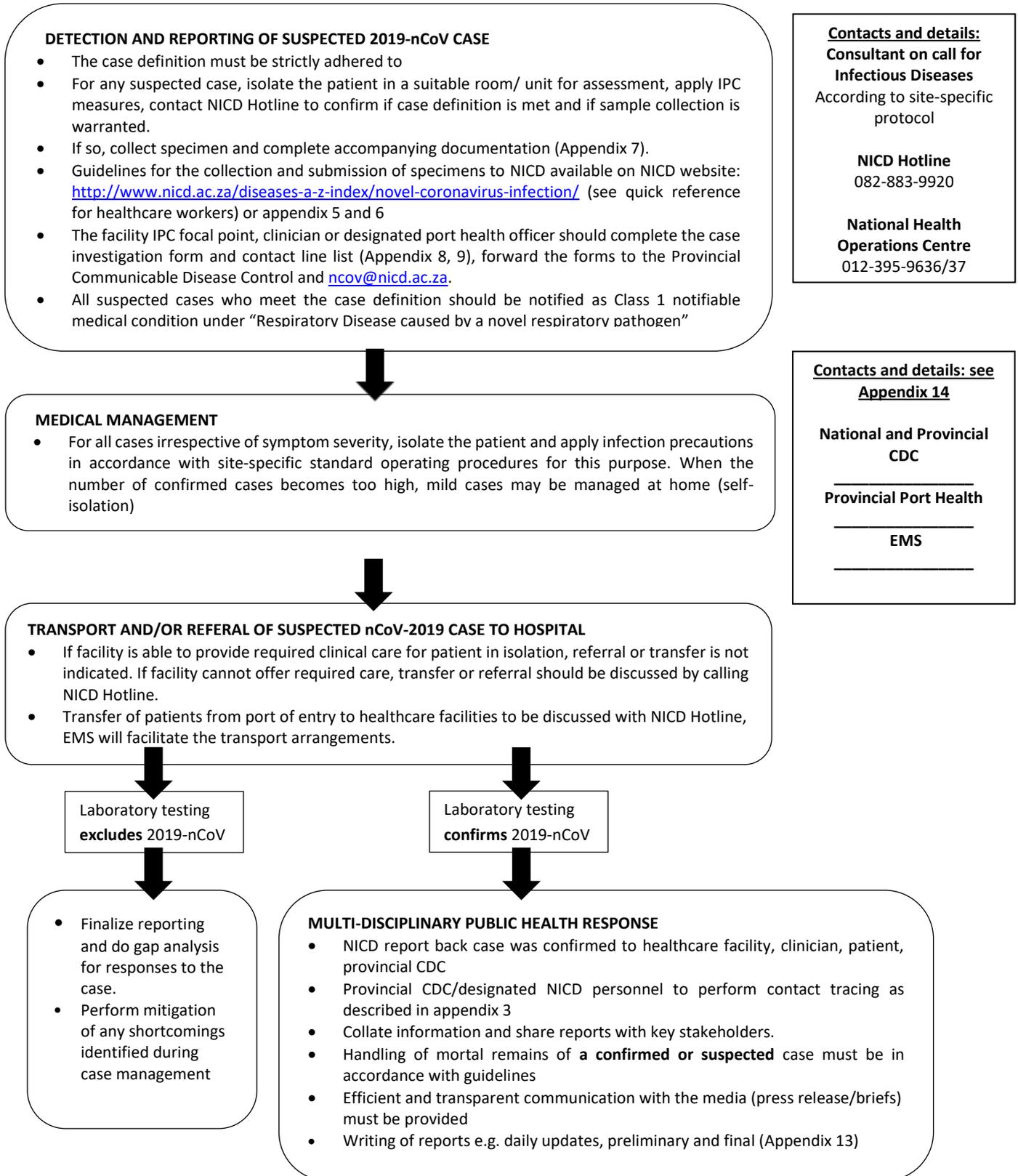
8 Additional Resources

- NICD website on 2019-nCoV: <http://www.nicd.ac.za/diseases-a-z-index/novel-coronavirus-infection/>
- Daily WHO situation update: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/>

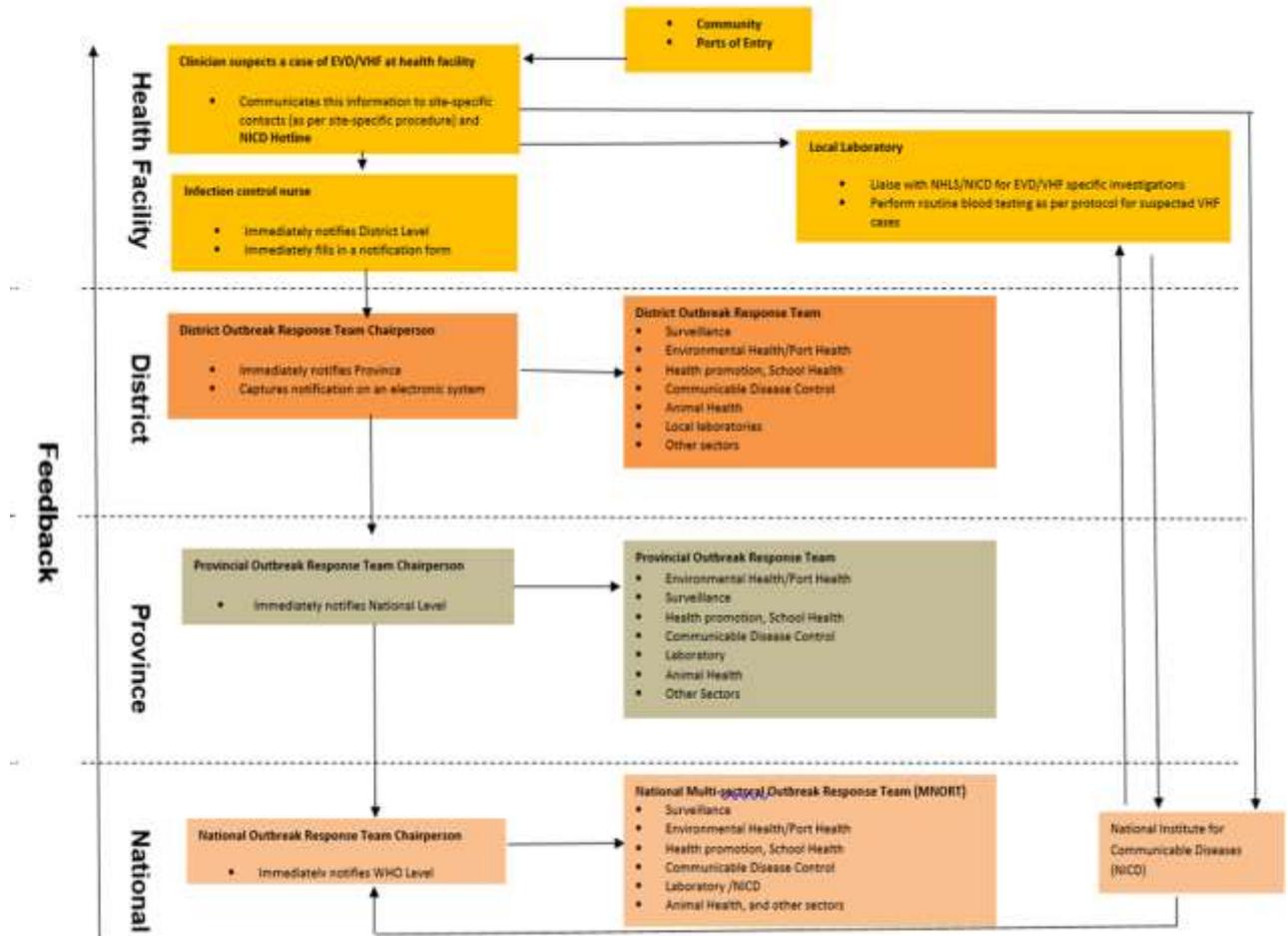
- The WHO interim clinical care guidance: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>.
- WHO interim guidance on infection prevention and control during health care for suspected cases of 2019-nCoV: https://www.who.int/docs/default-source/coronaviruse/20200126-ncov-ipc-during-health-care.pdf?sfvrsn=69e588ce_1&download=true
- WHO guidelines to minimise exposure of household contact: [https://www.who.int/publications-detail/home-care-for-patients-with-suspected-novel-coronavirus-\(ncov\)-infection-presenting-with-mild-symptoms-and-management-of-contacts](https://www.who.int/publications-detail/home-care-for-patients-with-suspected-novel-coronavirus-(ncov)-infection-presenting-with-mild-symptoms-and-management-of-contacts)

9 Appendices

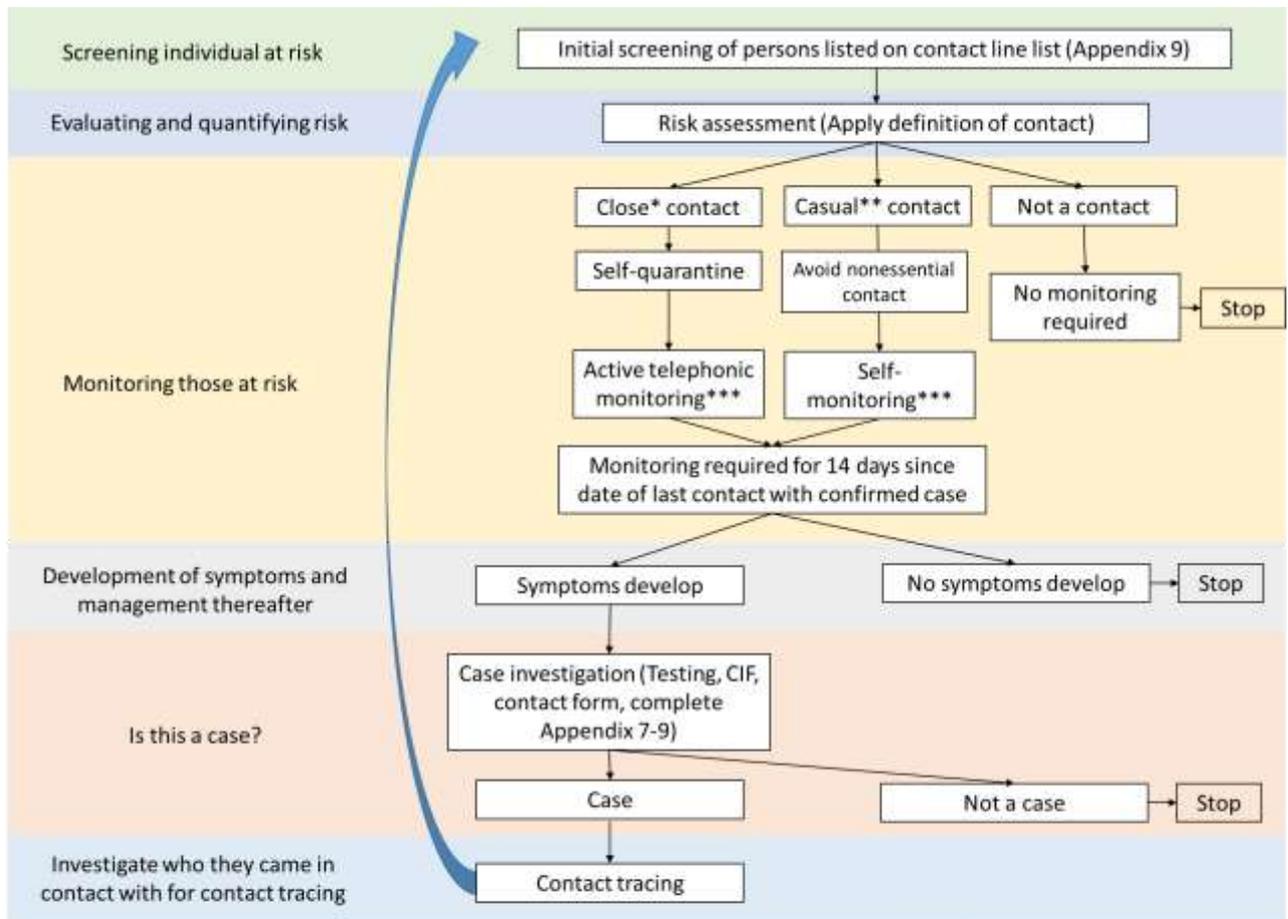
9.1 Appendix 1 – process flow for detection and response to cases



9.2 Appendix 2 – roles and responsibilities of facility, district, province and national vis a vis information flow



9.3 Appendix 3 – flow diagram for contact tracing, screening and monitoring



* Close contact: A person having had face-to-face contact (≤2 metres) or was in a closed environment with a 2019-nCoV case; this includes, amongst others, all persons living in the same household as a 2019-nCoV case and, people working closely in the same environment as a case. A healthcare worker or other person providing direct care for a 2019-nCoV 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 2019-nCoV case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated.
 ** Casual contact: Anyone not meeting the definition for a close contact but with possible exposure.
 ***Monitoring methods: Active-telephonic monitoring: NICD call centre will phone person who is home-quarantined each day for a symptom report; Self-monitoring: person to consult healthcare practitioner in the event of symptom development.

9.5 Appendix 5: Collection of nasopharyngeal and oropharyngeal swab and nasopharyngeal aspirate

Type of swabs

Only nylon or rayon flocked nasopharyngeal and oropharyngeal swabs with perforated, flexible plastic shaft must be used for collection of specimens. There is evidence to suggest some benefit to using flocked swabs for recovery of pathogens over other types. An appropriate size of the nasopharyngeal swab should be used, paediatric swab for children and adult swab for older children and adults. Cotton-tipped, calcium alginate swabs or swabs with wooden shafts should not be used as residues present in these materials may inhibit PCR assays.

Collecting the nasopharyngeal swab

- Gently insert nasopharyngeal flocked swab into the nostril aiming backwards, along the floor of the nasal cavity, until the nasopharynx is reached. Be careful not to insert swab upwards. If resistance is encountered during insertion of the swab, remove it and try the other nostril. The distance from the nose to the ear gives an estimate of the distance the swab should be inserted
- Gently rotate the swab and hold in place for a few seconds
- Slowly withdraw swab
- Unscrew and remove the cap from the tube with transport medium.
- Insert the swab directly into a vial containing universal transport medium (UTM)
- Break plastic shaft at the break point so that it can fit in the universal transport medium tube
- Close the tube with the lid
- Refrigerate at 2-8 °C

Collecting oropharyngeal swab (OPS)

- 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
- Ask the patient to tilt their head back and open mouth wide
- Hold the tongue down with a tongue depressor
- Have the patient say “aahh” to elevate the uvula
- Swab each tonsil first, then the posterior pharynx in a “figure 8” movement
- Avoid swabbing the soft palate and do not touch the tongue with the swab tip as this procedure can induce the gag reflex.
- Insert the swab directly into the same UTM vial containing the nasopharyngeal swab
- Break plastic shaft at the break point so that it can fit in the universal transport medium tube
- Close the tube with the lid
- Refrigerate at 2-8 °C

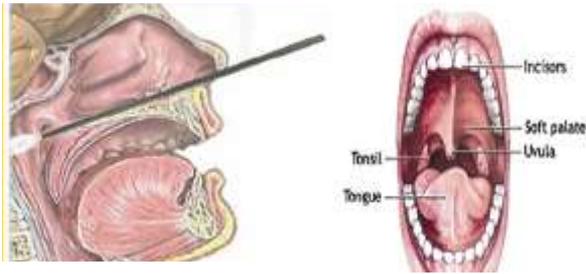


Figure 1: How to collect a nasopharyngeal swab (left) and oropharyngeal swab (right)

Nasopharyngeal aspirates

- Fill syringe with 2-3 ml saline; attach catheter tubing to syringe tip
- Slowly insert the catheter into one nostril until the pharyngeal wall is reached.
- Quickly inject saline into nostril and then aspirate the recoverable nasopharyngeal specimen.
- Withdraw the catheter under suction, being careful not to touch the tip.
- Inject the aspirated fluid into a labelled sterile specimen container/ universal transport medium.
- Refrigerate at 2-8 °C



Figure 2: Flocked swab and Universal Transport Medium

9.6 Appendix 6. Procedures for submission of specimens for investigation

Step 1: Report the PUI to the NICD to allow a risk assessment to be carried out and guide laboratory testing

- Contact the NICD Hotline +27 82 883 9920
- The test will be free of charge for patients meeting the case definitions above

Step 2: Complete the case investigation form and specimen submission form

- Fully complete the case investigation form <http://www.nicd.ac.za/diseases-a-z-index/novel-coronavirus-infection/>
- Fully complete the specimen submission form for each specimen submitted for testing <http://www.nicd.ac.za/diseases-a-z-index/novel-coronavirus-infection/>. For the “Test requested” section, select “Other” and specify “Novel coronavirus”.

Step 3: Submit specimens for specialized laboratory investigation

- The specimens should be stored and shipped at temperatures indicated in Table 1 above. Specimens should be packaged in accordance with the guidelines for the transport of dangerous biological goods (triple packaging using absorbent material) and transported directly and urgently.
- Transport specimens to NICD on same day as specimen collection.
- Please mark for attention of:

Suspected novel coronavirus CRDM

NHLS/NICD
Centre for Respiratory Disease and Meningitis (CRDM)
Lower North Wing, SAVP building
1 Modderfontein Rd, Sandringham, Johannesburg, 2131
South Africa

- Please notify by email the CRDM staff below of any pending shipments:
 - Linda de Gouveia lindad@nicd.ac.za (011-555-0327) or
 - Amelia Buys ameliab@nicd.ac.za (011-386-6373) or
 - Cardia Fourie cardiaf@nicd.ac.za (011-386-6373)
- Ensure that the completed (i) specimen submission form and (ii) case investigation form accompanies the specimens
- Avoid repeated freezing and thawing of specimens

Packaging of specimens for transfer to NICD

The principle of triple layer packaging should be followed (Figure 1).

UN/WHO approved shipping containers for hazardous specimens are commercially available, e.g. SAF-T-PAK® (www.saftpak.com) or PATHOPAK® (www.intelsius.com).

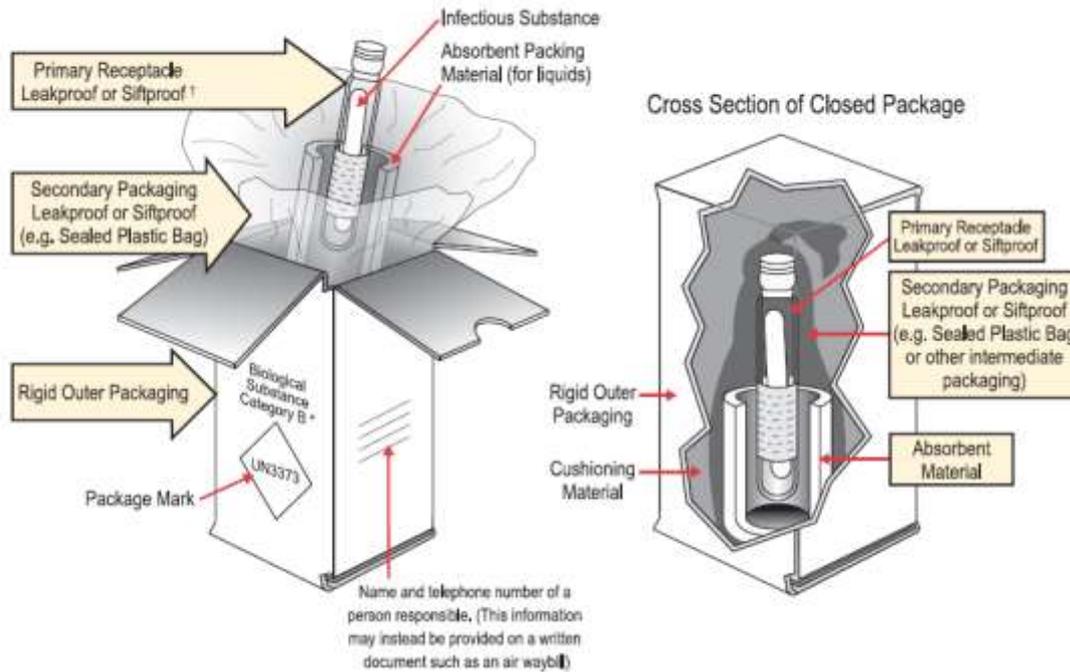


Figure 1. Example of the triple packaging system for the packing and labelling of Category B substances.

It is required that designated staff members per site are trained by approved provider in the packaging and transport of dangerous goods. The IATA of WHO websites may be consulted for international regulations and guidelines in this regard.

Primary specimen containers (properly labelled) should be wrapped in sufficient absorbent material (paper towels or tissues) to absorb the entire contents in the event of leakage.

The wrapped primary containers must be placed in durable, leak-proof **secondary containers** such as several layers of sealed plastic bags or, preferably, rigid screw-cap metal, plastic or similar containers (suitable containers are usually available from hospital dispensaries). The secondary container should be taped closed to prevent leakage.

The secondary containers and data forms, sealed separately in plastic, must then be placed in a **rigid outer (tertiary) container** such as a fibre carton or polystyrene cold box with cold packs. The outer wrapping should be addressed to:

**NHLS/NICD
Centre for Respiratory Disease and Meningitis (CRDM)**

**Lower North Wing, SAVP building
1 Modderfontein Rd, Sandringham, Johannesburg, 2131
South Africa**

The parcel should bear appropriate outer warning that it contains biohazardous material.

If transported by air, IATA regulations must be followed and appropriate labelling applied (refer to www.iata.org. In addition to completing an ordinary air waybill for parcels sent by air, it is necessary to complete a shipper's declaration for dangerous goods (refer to www.iata.org or your courier company).

Transport / shipment of samples to NICD

1. From NHLS laboratories:
 - Make use of usual overnight regional courier service to ship samples to NICD
2. From private clinicians / clinics / hospitals or across South African borders:
 - To organise shipment using existing processes, or contact CRDM for assistance if not available

9.7 Appendix 7 - Specimen submission form

The pdf can be downloaded at (http://www.nicd.ac.za/wp-content/uploads/2019/09/CRDM-specimen-submission-form-v2_13-Sep-2019.pdf)

CRDM episode no: CRDM lab no: Trak no: Date received:

Patient Information		Submitter Information (contact person for results)	
Identifier or Hospital no		Surname	
Surname		First name	
First name		Laboratory	
Age/Date of birth		City, Country	
Gender		Contact number (country code) + ()	
Facility/Hospital		Email address	
Specimen Details			
Specimen collection date:	dd-mm-yyyy		
Specimen type:	<input type="checkbox"/> Combined NP/OP swab	<input type="checkbox"/> Nasopharyngeal (NP) aspirate	<input type="checkbox"/> Nasal swab
	<input type="checkbox"/> Nasopharyngeal (NP) swab	<input type="checkbox"/> Bronchoalveolar lavage (BAL)	<input type="checkbox"/> Sputum
	<input type="checkbox"/> Oropharyngeal (OP) swab	<input type="checkbox"/> Pleural fluid	<input type="checkbox"/> CSF
	<input type="checkbox"/> Tracheal aspirate (TA)	<input type="checkbox"/> Blood culture	<input type="checkbox"/> Serum
	<input type="checkbox"/> Whole blood	<input type="checkbox"/> Other, specify:	
Laboratory Test Details (please consult with CRDM if testing other than influenza, RSV or B. pertussis is required)			
Tests requested:	<input type="checkbox"/> Avian influenza	<input type="checkbox"/> Influenza / RSV	<input type="checkbox"/> MERS-CoV
	<input type="checkbox"/> Bordetella pertussis	<input type="checkbox"/> Legionella spp.	<input type="checkbox"/> Atypical pneumonia*
	<input type="checkbox"/> C. diphtheriae	<input type="checkbox"/> Respiratory panel (bacterial & viral)*	<input type="checkbox"/> Bacterial meningitis*
* Refer to page 2 for test panel details	<input type="checkbox"/> Group A streptococcus	<input type="checkbox"/> Community-acquired pneumonia (bacteria)*	<input type="checkbox"/> Viral meningitis*
	<input type="checkbox"/> Group B streptococcus	<input type="checkbox"/> Hospital-acquired pneumonia (bacteria)*	<input type="checkbox"/> Other, specify:
Clinical Presentation and Outcome		Date of symptom onset: dd-mm-yyyy	
Clinical diagnosis:	<input type="checkbox"/> Acute rheumatic fever	<input type="checkbox"/> Meningococcal disease	<input type="checkbox"/> Lower respiratory tract infection

9.8 Appendix 8– Case investigation form

PDF version at: <http://www.nicd.ac.za/diseases-a-z-index/novel-coronavirus-infection/>

Internal use
CRDM PUI form no: _____
CRDM unique no: _____

Patient under investigation (PUI) form: Request for 2019-nCoV Testing

Please note that the original case investigation forms should be sent together with the specimen collection form. Furthermore, the completed case investigation form must be scanned and emailed to ncov@nicd.ac.za as detailed below
Tel: (+27)3866392/ (+27) 3866410 | Fax: (+27)11 8829979 | Hotline: 082 883 9920 | Queries / submission: ncov@nicd.ac.za

Today's date: DD/MM/YYYY Form completed by (Name, Surname): _____ Contact number(s): _____
Is this a: **New clinical query** **If contact of a known case, provide case details:** **Known case first name:** _____
Contact of a known case **Known case surname:** _____
Known case DOB: DD/MM/YYYY

Detected at point of entry? Y N Unkn If yes, date: DD/MM/YYYY Please specify the point of entry: _____

PATIENT DETAILS		DOCTOR'S DETAILS	
Patient hospital number (if available): _____		First name: _____	
First name: _____ Surname: _____		Surname: _____	
DOB: <u>DD/MM/YYYY</u> Sex: Male <input type="checkbox"/> Female <input type="checkbox"/>		Facility name: _____	
Residency: SA resident <input type="checkbox"/> Non-SA resident <input type="checkbox"/> (specify) _____		Contact number/s: _____	
Current residential Address ¹ : _____		Email address: _____	
Patient's contact number(s): _____ <small>Please include alternative number</small>		_____	
Please indicate occupation (tick any if apply):		_____	
Student <input type="checkbox"/> Working with animals <input type="checkbox"/> Healthcare worker <input type="checkbox"/> Other <input type="checkbox"/>		Unemployed <input type="checkbox"/> Health laboratory worker <input type="checkbox"/> Facility name: _____ Specify _____	

NEXT OF KIN CONTACT DETAILS (alternative contact details)

First name: _____ Surname: _____
Relationship to the patient: _____ Contact number(s): _____

CLINICAL PRESENTATION AND HISTORY

Date of symptom onset: DD/MM/YYYY Date of current consultation/admission: DD/MM/YYYY

Fever (≥38°C) <input type="checkbox"/>	Sore throat <input type="checkbox"/>	Myalgia/body pains <input type="checkbox"/>
History of fever <input type="checkbox"/>	Shortness of breath <input type="checkbox"/>	General weakness <input type="checkbox"/>
Cough <input type="checkbox"/>	Nausea/vomiting <input type="checkbox"/>	Irritability/confusion <input type="checkbox"/>
Chills <input type="checkbox"/>	Diarrhoea <input type="checkbox"/>	Other <input type="checkbox"/> (specify if other) _____

DIAGNOSIS

- Did the patient have clinical or radiological evidence of pneumonia Y N
- Were chest X-rays (CXR) done: Y N If yes, CXR Findings: _____
- Did the patient have clinical or radiological evidence of acute respiratory distress syndrome (ARDS)? Y N
- Does the patient have another diagnosis/etiology for their respiratory illness? Y (specify) _____ N Unknown

This section is a prerequisite for testing, therefore, please fill out the below section to the best of your ability.
Laboratory testing will be delayed if forms are incomplete or were filled in incorrectly.
In the 14 days before symptom onset did the patient (mark all that apply):

- Have close physical contact² with a **known** 2019-nCoV case? Y N Unkn
- If the patient has been in a close physical contact with a known 2019-nCoV case, please indicate contact setting:
 Healthcare setting Family setting Work place Public transport setting Other Specify: _____
- Patient is a healthcare worker (HCW) who was exposed to patients with severe acute respiratory infections, unless another aetiology has been identified to explain the clinical presentation of the HCW? Y N Unkn
- Is the patient part of a severe respiratory illness cluster of unknown aetiology that occurred within a 14-day period? Y N Unkn
- Patient has visited a health care facility (as a patient or visitor) in a country where hospital-associated 2019-nCoV infections have been reported? Y N Unkn (if yes, complete travel section)
- Has the patient travelled to/from Wuhan City, (Hubei Province, China)³ or area/s with evidence of sustained 2019-nCoV human-to-human transmission, or a declared outbreak? Y N Unkn (if yes, complete travel section)

TRAVEL HISTORY

If patient traveled outside South Africa in the last 14-days, please complete section below for countries visited

Country and city or cities visited	Date of departure (travel to area)	Date of return (travel from area)
1.	DD/MM/YYYY	DD/MM/YYYY
2.	DD/MM/YYYY	DD/MM/YYYY

UNDERLYING FACTORS/CO-MORBID CONDITIONS

Asthma:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Cardiac disease:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Chronic kidney disease:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Chronic liver disease:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>
Chronic neurological/neuromuscular disease:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	COPD/ Chronic pulmonary disease:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Diabetes:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Immuno-deficiency (excluding HIV):	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>
HIV:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Is the patient virally suppressed?	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Recent viral load:	_____		
Obesity:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Pregnancy:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Trimester:	_____	Tuberculosis:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>
Other:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	(specify):	_____				

TREATMENT/MANAGEMENT

Patient hospitalised:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Admitted to ICU:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	Ventilation:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	On ECMO:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>
Antibiotics:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>	if Yes, list: _____		Tamiflu/ other antiviral drugs:	Y <input type="checkbox"/> N <input type="checkbox"/> Unkn <input type="checkbox"/>		
White cell count total:	_____	Differential neutrophils/lymphocytes%:	_____				
Has the patient been isolated at:		Home <input type="checkbox"/>	Healthcare facility <input type="checkbox"/>	Not isolated <input type="checkbox"/>	Other <input type="checkbox"/>	Specify: _____	
If patient has been isolated at home or at a healthcare facility, please provide date of isolation: DD/MM/YYYY _____							

OUTCOME

Currently hospitalised:	Y <input type="checkbox"/>	Discharge date:	DD/MM/YYYY _____
Discharged	<input type="checkbox"/>	Name of facility:	_____
Transferred	<input type="checkbox"/>	Date of death:	DD/MM/YYYY _____
Died	<input type="checkbox"/>	(specify)	_____
Other	<input type="checkbox"/>		

*If patient is a not a permanent resident, may you please provide their current residential address while residing in South Africa. 2*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. 3 Check who website for areas/countries with reported 2019-nCoV cases <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>. Please refer to <http://www.nicd.ac.za/> for most recent version of this document before use.*

Once the PUI form has been completed, please complete the contact line list provided. Completed line list/s must be scanned and emailed to ncov@nicd.ac.za

9.9 Appendix 9 – Contact line list

PDF version at: <http://www.nicd.ac.za/diseases-a-z-index/novel-coronavirus-infection/>



2019-nCoV CONTACT LINE LIST

Complete a contact line list for every case under investigation and every confirmed case



Details of case under investigation/confirmed case		
NICD Identifier	Date Symptom Onset	DD/MM/YYYY
Surname	Name	
Contact number	Alternative number	
Travel (provide details of all: 7 days before onset)		Travelled by Bus <input type="checkbox"/> Plane <input type="checkbox"/>
Air/bus line	Flight/bus #	Seat #

Details of health official completing this form	Today's date	DD/MM/YYYY
Surname	Name	
Role	Facility name	
Email address	Telephone number(s)	

Details of contacts (With close contact¹ 7 days prior to symptom onset, or during symptomatic illness.)

	Surname	First name(s)	Sex (M/F)	Age (Y)	Relation to case ²	Date of last contact with case	Place of last contact with case (Provide name and address)	Residential address (for next month)	Phone number(s), separate by semicolon	HCW? ³ (Y/N) If Yes, facility name
1						DD/MM/YYYY				
2						DD/MM/YYYY				
3						DD/MM/YYYY				
4						DD/MM/YYYY				
5						DD/MM/YYYY				
6						DD/MM/YYYY				
7						DD/MM/YYYY				
8						DD/MM/YYYY				

¹ Close contact: A person having had face-to-face contact (≤ 2 metres) or was in a closed environment with a 2019-nCoV case; this includes, amongst others, all persons living in the same household as a 2019-nCoV case and, people working closely in the same environment as a case. A healthcare worker or other person providing direct care for a 2019-nCoV 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 2019-nCoV case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated. ² Chose from: Aunt, Child, Class mate, Colleague, Cousin, Father, Friend, Grandfather, Grandmother, Healthcare worker taking care of, Mother, Nephew, Niece, Other relative, Uncle. ³ Healthcare worker.

Details of contacts (With contact¹ 7 days prior to symptom onset, or during symptomatic illness.)

	Surname	First name(s)	Sex (M/F)	Age (Y)	Relation to case ²	Date of last contact with case	Place of last contact with case (Provide name and address)	Residential address (for next month)	Phone number(s), separate by semicolon	HCW? ³ (Y/N) If Yes, facility name
9						DD/MM/YYYY				
10						DD/MM/YYYY				
11						DD/MM/YYYY				
12						DD/MM/YYYY				
13						DD/MM/YYYY				
14						DD/MM/YYYY				
15						DD/MM/YYYY				
16						DD/MM/YYYY				
17						DD/MM/YYYY				
18						DD/MM/YYYY				
19						DD/MM/YYYY				
20						DD/MM/YYYY				
21						DD/MM/YYYY				

¹ Close contact: A person having had face-to-face contact (≤2 metres) or was in a closed environment with a 2019-nCoV case; this includes, amongst others, all persons living in the same household as a 2019-nCoV case and, people working closely in the same environment as a case. A healthcare worker or other person providing direct care for a 2019-nCoV 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 2019-nCoV case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated.. ² Chose from: Aunt, Child, Class mate, Colleague, Cousin, Father, Friend, Grandfather, Grandmother, Healthcare worker taking care of, Mother, Nephew, Niece, Other relative, Uncle. ³ Healthcare worker.

9.10 Appendix 10 – Contact monitoring tool

PDF version at: <http://www.nicd.ac.za/diseases-a-z-index/novel-coronavirus-infection/>



2019-nCoV DAILY SYMPTOM MONITORING TOOL



Complete for contact of a confirmed 2019-nCoV case

Details of <u>contact</u> of confirmed case				Details of health official completing this form		Date completing form	
NICD Identifier	Date of contact	DD/MM/YYYY	Place last contact	Surname	Name	DD/MM/YYYY	
Surname	Name			Role	Facility name		
Date of birth	DD/MM/YYYY	Age (Y)	Sex M <input type="checkbox"/> F <input type="checkbox"/>	Email address	Telephone number		
Healthcare worker	Y <input type="checkbox"/> N <input type="checkbox"/> If yes, facility name			Next of kin details			
Contact number(s)	Email			Next of Kin name and surname	Next of Kin contact number		
Physical address							
House number	Street		Suburb	Town			
District	Province		Patient traced	Y <input type="checkbox"/> N <input type="checkbox"/>			
Details of confirmed case							
Contact type ¹	Close <input type="checkbox"/> Casual <input type="checkbox"/>	Relation to case ²		NICD identifier	Surname	DOB	DD/MM/YYYY

Instructions for completion: Mark "Y" if symptom present and "N" if not. If any symptoms are present collect, contact _____ immediately and make immediate arrangements for the collection of a combined nasopharyngeal and oropharyngeal swab. Refer to 2019-nCoV Quick Guide on the NICD website for additional details. Days post exposure to case.

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Date (DD/MM)														
Measured body temp														
Chills	<input type="checkbox"/> Y <input type="checkbox"/> N													
Cough	<input type="checkbox"/> Y <input type="checkbox"/> N													
Sore throat	<input type="checkbox"/> Y <input type="checkbox"/> N													
Shortness of breath	<input type="checkbox"/> Y <input type="checkbox"/> N													
Myalgia/body pains	<input type="checkbox"/> Y <input type="checkbox"/> N													
Diarrhoea ³	<input type="checkbox"/> Y <input type="checkbox"/> N													

¹ Close contact: A person having had face-to-face contact (≤2 metres) or was in a closed environment with a 2019-nCoV case; this includes, amongst others, all persons living in the same household as a 2019-nCoV case and, people working closely in the same environment as a case. A healthcare worker or other person providing direct care for a 2019-nCoV 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 2019-nCoV case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated. Casual contact: Anyone not meeting the definition for a close contact but with possible exposure. ² Chose from: Aunt, Child, Class mate, Colleague, Cousin, Father, Friend, Grandfather, Grandmother, Healthcare worker taking care of, Mother, Nephew, Niece, Other relative, Uncle. ³ Diarrhoea defined as three or more loose stools in a 24-hour period.

9.11 Appendix 11 – Response to suspected case at port of entry

Standard operating procedure for the management of suspected communicable disease at the points of entry and transportation to a designated hospital

1. INTRODUCTION

Port Health Service (PHS) is defined as the first line of defence to protect the citizens of South Africa and visitors against the health risks associated with cross border movement of people, conveyances, baggage, cargo shipments and other imported consignments. It is thus vital for all points of entry to be on the alert and prepared to respond to a possible importation of a communicable disease, whether intentional or unintentional.

The following standard operating procedures detail measures that must be implemented by Port Health officials in preventing and responding to a suspected case of 2019-nCov.

2. SCREENING MEASURES

- a) Port Health Officials (PHO) must monitor all arriving conveyances from the affected countries and increase surveillance measures.
- b) Upon arrival of the conveyance, PHO must collect and verify the health documentation and interview the crew member/operator to determine if there is any sick passenger on board.
- c) In addition to the routine interview of crew members/operators, PHO must ask crew members questions specific to signs and symptoms of 2019-nCoV.
- d) If PHO is certain that there are no sick passengers on board and all health requirements have been met, the passengers may be allowed to disembark.
- e) All arriving travellers must be channelled through the thermal scanning processes.
- f) Travellers found to have elevated temperature must be escorted to the Port Health Clinic where available, for further examination and must be interviewed to determine their travel history.
- g) Where Port Health Clinic is not available, Port Health must interview the traveller with elevated temperature to determine their travel history, record the details of the traveller and if required transfer the traveller to the nearest health facility.
- h) Travellers presenting with any one of these symptoms; fever, cough, headache, joint and muscle aches, sore throat, weakness, diarrhoea, vomiting, stomach pain and have travelled to the affected countries must be isolated and arrangements be made for transportation of the traveller to the nearest designated health facility (see table below) for further management.

Table 2 : Hospitals and contact persons for hospitals designated to receive PUI/confirmed cases

PROVINCE	2019-nCoV DESIGNATED HOSPITAL NAME	CEO	IPC
LIMPOPO	Polokwane Hospital	Mr Ramawa: 081 494 6995	Ms Maronel Kruger: 079 978 7984
MPUMALANGA	Rob Ferreira	S FG Nyathi : 071 682 6396 / 013 741 6307	Ms Francina: 079 365 5522
GAUTENG	Charlotte Mexeke	Ms Gladys Bogoshi: 082 9273 565	Mr Malebati : 082 332 8501

	Steve Biko	Dr M Mathebula: 082 907 0973	
	Thembisa Hospital	Dr Lecopane Mogaladi: 082 828 4061	Ms Esther Moshia: 083 2758 171
KWAZULU-NATAL	Greys Hospital	Dr Ben Bilenge: 083 555 1563	Sr Jennifer Green 074 311 3330
NORTH WEST	Klerksdorp Hospital	Dr Dikhing Mahole: 082 566 1146	Sr Mojaki Mosiatlhaga: 082 450 6116
FREE STATE	Pelonomi Hospital		
NORTHERN CAPE	Kimberley Hospital	Allister Katana: 072 560 9990	S Maritjie Langevelt: 084 467 6888
EASTERN CAPE	Livingston Hospital	D Makamba: 082 854 1155	
WESTERN CAPE	Tygerberg Hospital	Dr Dimitri Erasmus: 082 455 0824 / 0219384136 COO: Dr Paul 021 938 5883	Maria Aucamp: 021 938 5065/5054 Dr Jantjie: 083 419 1452 / 0219389645 Dr Jack Meintjies: 021 938 5563/ 5053/ 5054

3. IN THE EVENT OF PERSON UNDER INVESTIGATION

3.1 Prior to arrival of conveyance

- a) If traveller presents with symptoms related to a communicable disease while on board a conveyance;
 - In case of airport/sea port the tower/captain will inform Operations/Agent who must inform PHO of the ill passenger,
 - In case of land port, PHO will be informed on arrival of the conveyance at the port.
- b) Suspected case is moved to an isolated area on the conveyance, if sufficient space is available.
- c) Nurse or PHO must contact the NICD to confirm whether the symptoms meet the 2019-nCoV PUI case definition;
- d) Based on the information provided, Port Health must notify and make arrangements with the designated health facilities and ambulance for transportation of the ill traveller.
- e) Port Health must then notify the relevant Provincial Communicable Disease Control Coordinator.

3.2 Once the conveyance has arrived at the Point of Entry

- a) PHO must board the conveyance, together with the clinical personnel and ensure entrance to the conveyance is secured and no person enters or leaves the conveyance.
- b) PHO must obtain and confirm the following information from the crew member:
 - number of cases,
 - signs and symptoms;
 - vector control measures, where required and
 - collect and verify the required health documentation and passenger list;

- c) PHO must brief the passengers that there is a possible case of 2019-nCoV on board, calm them and provide the necessary health information, including, reporting to the nearest health facility and inform the health worker of their travel history should they experience any symptoms;
- d) PHO must identify the contacts and allow all passengers except the sick passenger and contacts to disembark;
- e) **Sick passenger may then be escorted from the aircraft and transported to the designated health facility (see section 5 below: Medical Evacuation Procedure);**
- f) Passenger locator cards and health information must be handed out to the contacts and inform them that they will be contacted for monitoring purposes;
- g) Contacts may then be allowed to disembark and channelled through thermal screening processes.
- h) Port Health must hand over passenger list and close contact details to Provincial Communicable Disease Control Coordinator (contact details in table below) for further monitoring;
- i) The ground handling and cleaning company of the conveyance operators should be notified at the same time so that preparations can be made for appropriate cleaning and/or disinfection of the conveyance after passengers have disembarked; if required;
- j) PHO must monitor the entire cleaning and/or disinfection process.

Table 3: Contact details of Communicable Diseases control coordinators

Province	CDC coordinator	Contact number/s
ECP	Mr. T Dlamini Ms. N Mgobo	083 378 0189 060 579 9027
FSP	Ms. B Nyokong Ms. D Baleni	083 757 8217/051 408 1734 082 463 7499
GP	Dr. Asomugha Ms. C Kesebilwe	082 330 1490 083 490 8165 / 011 355 3867
KZN	Ms. P Govender	071 609 2505
LP	Ms. M.F. Ngobeni Ms. M.P. Mudau	079 491 1909 / 015 293 6062 071 678 3864
MP	Mr M Zwane Ms. H Mpangane	082 229 8893 / 013 766 3078 076 522 8511 / 013 766 3411
NCP	Ms. Gloria Hottie	072 391 3345 / 053 830 0529
NWP	Ms C Lebeko	082 421 7985 / 018 397 2600
WCP	Ms C Lawrence	072 356 5146 / 021 483 9964

4. MANAGEMENT OF INTENTIONAL TRANSPORTATION OF A SICK PASSENGER INTO SOUTH AFRICA/CONFIRMED CASE

- a) Conveyance operators or medical companies transporting patients to South Africa for medical attention by commercial flight, charter flight or road ambulances must notify PHO beforehand utilising notification Form AC1 and include the medical history of the patient.
- b) Form AC2 must be completed by the medical crew for information on the symptoms of the patient.
- c) For patients arriving from the affected countries, Port Health must consult with the NICD and the Chief Director: Environmental Health & Port Health Services before a decision is taken to approve or disapprove the transportation of the patient.
- d) If approval to transport the patient is granted, PHO must issue Form PH1 to the applicant.
- e) In instances where a patient develops symptoms related to a communicable disease before or during transportation, the AC2 form must be completed and handed over to the PHO upon arrival at the airport.
- f) Port Health Officials and Port Health Nurse must assess the patient upon arrival and inform the hospital receiving the patient of the condition.

- g) All information related to the passenger must be communicated to the Provincial CDC and NICD to conduct a follow-up on the case.
- h) Port Health Official or Port Health Nurse must follow up with the hospital to receive an update prior to closing the file.
- i) Port Health Officials (PHO) must monitor all arriving conveyances from the affected countries and increase surveillance measures.
- j) Upon arrival of the conveyance, Port Health Officials must collect and verify the health documentation and interview the crew member/operator to determine if there is any sick passenger on board.
- k) In addition to the routine interview of crew members/operators, Port Health Officials must ask crew members questions specific to signs and symptoms of 2019-nCoV.
- l) If PHO is certain that there are no sick passengers on board and all health requirements have been met, the passengers may be allowed to disembark.
- m) All arriving travellers must be channelled through the thermal scanning processes.
- n) Travellers found to have elevated temperature must be escorted to the Port Health clinic where available, for further examination and must be interviewed to determine their travel history.
- o) Where Port Health Clinic is not available, Port Health must interview the traveller with elevated temperature to determine their travel history, record the details of the traveller and if required transfer the traveller to the nearest health facility.
- p) Travellers presenting with any one of these symptoms; fever, cough, headache, joint and muscle aches, sore throat, and weakness, diarrhoea, vomiting, stomach pain and have travelled to the affected countries must be isolated and arrangements be made for transportation of the traveller to the nearest designated health facility for further management.

5. MEDICAL EVACUATION PROCEDURE

This section is referenced from the **STANDARD OPERATING PROCEDURE FOR THE RECOGNITION AND MANAGEMENT OF A SUSPECTED OR CONFIRMED NOVEL CORONAVIRUS PATIENT.**

1.1 Suspected/Confirmed 2019-nCoV medical evacuation procedure

- The provincial Emergency management Services (EMS) manager must be contacted when an ambulance is requested to transfer a suspected or confirmed 2019-nCoV patient to and from a designated /referral hospital. (Annexure 8: Provincial EMS Managers' contact details)
- The Provincial CDC must be informed prior to EMS medical evacuation of any suspected/confirmed 2019-nCoV patient.
- Driver must not have any contact with patient and must act as liaison
- Ideally two trained EMS specialized response team personnel must accompany patient.
- Hand hygiene must be observed before and after every contact with patient.
- Don correct PPE.
- Focus of care is supportive and maintaining existing treatment. No invasive procedures should be done in transit. (No sharps to be used)
- Keep contact with designated referral hospital. Determine and communicate an estimated time of arrival (ETA) and report an update on patient's condition, as hospital needs to prepare: - isolation ward needs to be prepared, staff need to don PPE, security needs to clear public and staff from entrance and route.
- When arriving at hospital, the patient is to be kept inside ambulance until hospital indicates that the patient is allowed to enter.
- Provincial CDC must be informed after every 2019-nCoV transfer; crew must be placed on 14-day contact list and must submit temperature readings twice a day.

1.2 Unsuspected 2019-nCoV EMS medical evacuation procedure

- Normal call out to a home or healthcare facility and/ or after transporting has commenced, a suspicion for a possible 2019-nCoV case is raised.
- Immediately contact and report to Provincial CDC who will assist in advice and decision on where to take patient.
- Driver must not have any contact with patient and must act as liaison.
- Hand hygiene must be observed before and after every contact with patient.
- EMS personnel must Don correct PPE.
- Focus of care is supportive and maintaining existing treatment. No invasive procedures should be done in transit. (No sharps to be used)
- Keep contact with designated referral hospital. Determine and communicate an estimated time of arrival (ETA) and report an update on patient's condition, as hospital needs to prepare: - isolation ward needs to be prepared, staff need to don PPE, security needs to clear public and staff from entrance and route.
- When arriving at hospital, the patient is to be kept inside ambulance until hospital indicates that the patient is allowed to enter.
- Provincial CDC must be informed after every 2019-nCoV transfer, crew must be placed on 14-day contact list and must submit temperature readings twice a day.

1.3 Medical evacuation procedure of 2019-nCoV patient to and from a Healthcare facility

- When arriving at the healthcare facility, the patient and clinical team will remain inside the ambulance or isolation ward. The driver will liaise with healthcare staff and only after the indication from healthcare staff has been given that they are ready to receive/transfer the patient, can the patient be taken to/from the ambulance/isolation ward.
- Driver must ensure that healthcare facility is ready to receive or transfer the patient and that public are cleared from entrance and route that patient will be moved along.
- During the movement of the patient, ensure that all spills are immediately cleaned and decontaminated on the route that patient was moved.

1.4 Cleaning and decontamination

- Crew decontaminating the ambulance should wear correct PPE.
- During or after transport of a 2019-nCoV patient, vomitus, blood and other spillages should be flooded with disinfectant, namely chlorine solution with a concentration of 5000 ppm (0.5%) or 20x30g sachets of Biocide D Extra/10L water, covered with paper towels or absorbent material and left for at least 30 minutes before cleaning.
- Never use high pressure jet spray inside confined space of ambulance.
- Physical material like blood and vomitus must first be cleaned up and removed before terminal cleaning can start.
- All surfaces should be wiped down and washed at least two times, with 500 ppm (0.05%) chlorine solution. **Vehicle is ready to use again immediately after cleaning.**
- Containers with secretions, excretions and other waste products such as vomitus and blood should be flooded with a copious amount of disinfectant, namely chlorine solution with a concentration of 5000 ppm (0.5%) or 20x30g sachets of Biocide D Extra/10L water, for at least 30 minutes.
- All items leaving the ambulance should be enclosed and sealed in adequate layers of appropriate bags to prevent leakage. The outer surfaces of the bags should be wiped with chlorine disinfectant at a concentration of 0.05% (500 ppm) and labelled as bio hazardous. Disposable equipment should be disposed of by incineration (as per normal Health Care Waste Management (HCWM) Regulation Act 59, 2008), non-disposable equipment can be washed and disinfected (Autoclaved).
- If sharps bin, for any reason, was used it needs to be wiped down and placed inside plastic bag. Bag is wiped again and placed inside double red bag and sealed in waste box that should then be clearly marked as containing sharps.

1.5 Handling of Health care waste

- As per normal HCWM Regulation, ensure that waste is safely stored until the health care waste management company can pick it up. Ensure that the company knows and acknowledges that waste was generated by suspected or confirmed 2019-nCoV case.
- All bags, bins and boxes must be adequately sealed, as not to leak any fluids, and must be wiped down with 0.05% chlorine solution before being stored or removed.

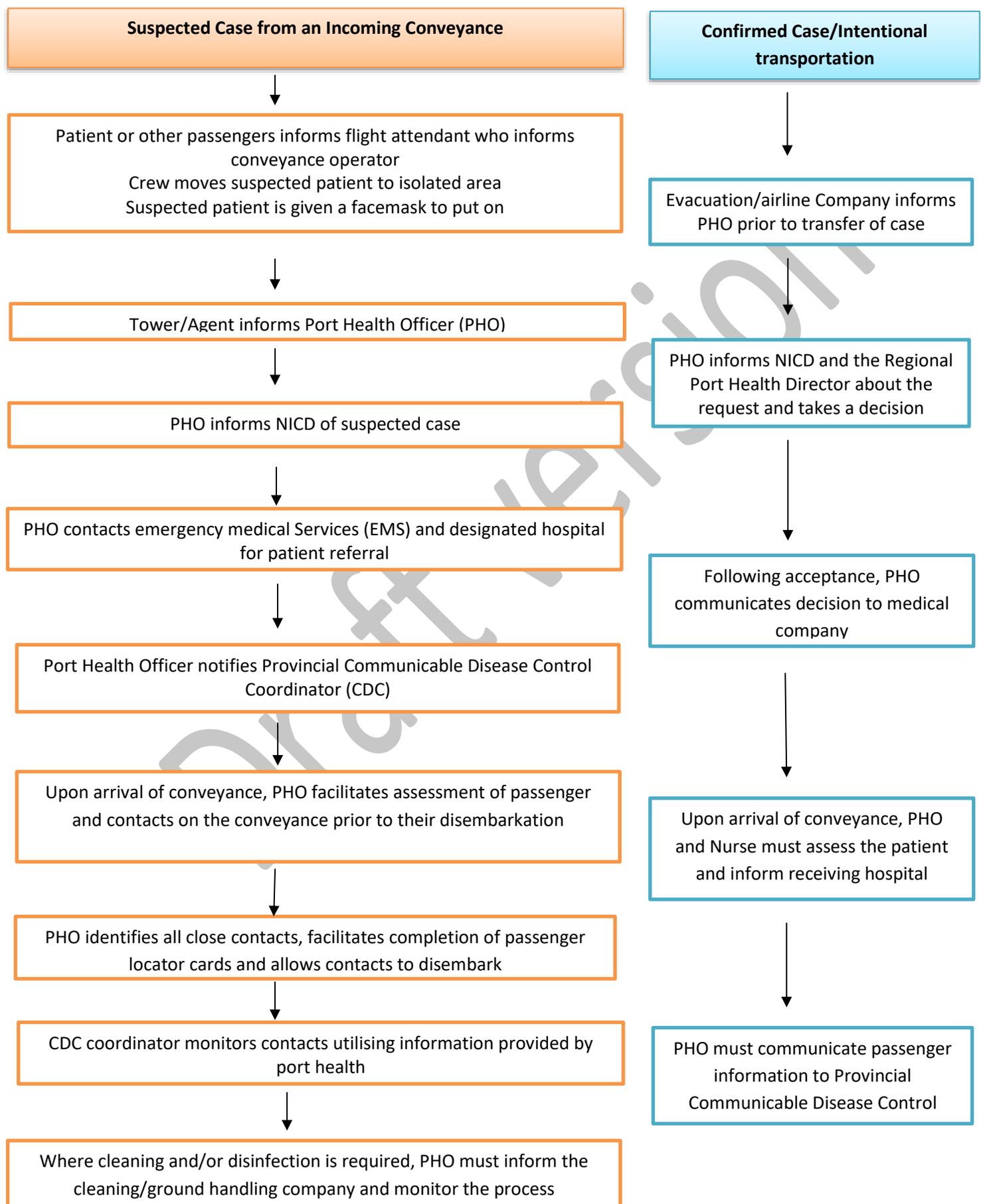
1.6 Handling of Suspected or Confirmed 2019-nCoV case mortal remains.

- If patient dies in transit, the EMS Provincial coordinator and Provincial CDC must be notified. A decision on where to take the corpse must be communicated to the ambulance crew.
- Provincial Environmental Health must be informed.
- Under no circumstances will the corpse be removed from ambulance other than at assigned facility that was communicated to ambulance crew.
- The corpse must be placed in double body bags that are fluid leak proof. The bags must be wiped down with a 0.05% chlorine solution before leaving the ambulance.
- The removal of a suspected 2019-nCoV corpse must be done under the directive of Environmental Health

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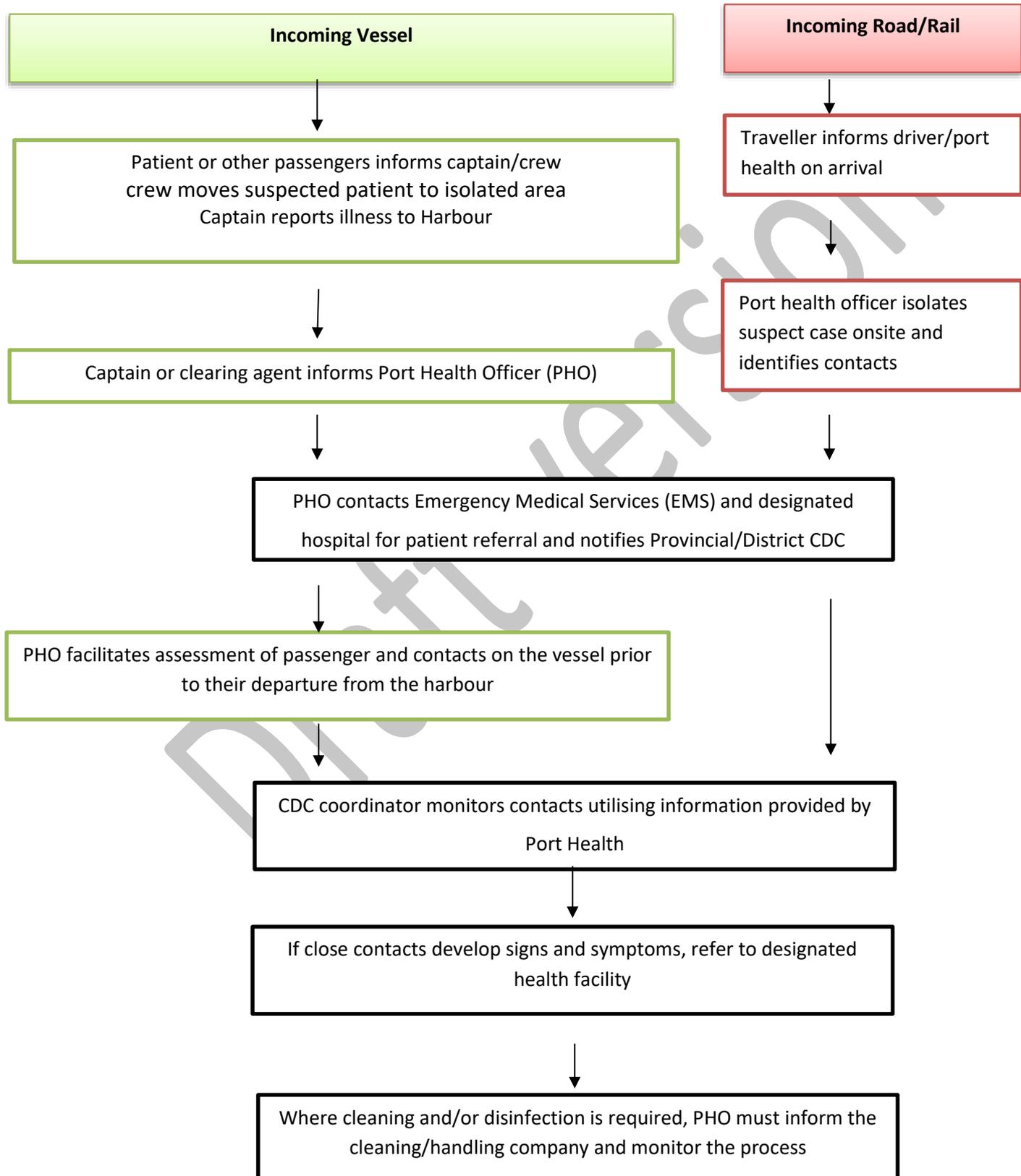
Annexure 11.1:

Flow diagram depicting the approach to an imported PUI/suspected or confirmed case of infectious disease at port of entry (PoE)



Annexure 11.2:

The flow diagram depicts the process flow for the management of a suspected or possible case from a country/area reporting outbreak of contagious infectious disease



9.12 Appendix 12 – Guidelines for the safe handling of human remains of confirmed/suspected 2019-nCoV case and

Repatriation of Human Remains of a Person Who Died of Confirmed/Suspected 2019-nCoV

- The human remains of a person who has died of a confirmed 2019-nCoV should be cremated.
- Where cremation is not possible, the repatriation of human remains who died of confirmed/suspected 2019-nCoV must be conducted in line with the Regulations Relating to the Management of Human Remains (Regulation 363 of 22 May 2013).
- A formal request for an import/export permit issued by the Director-General: Health must be made by the Department of International Relations and Cooperation (DIRCO) or through the embassies, prior to importation/exportation of the human remains.
- Once a permit has been issued by the Director-General, the human remains may be transported.
- The human remains must not be embalmed and shall be transported under the following precautions:
 - Be placed in leak proof triple body bag and in a non-transparent sealed coffin,
 - The first two body bags must be transparent and sealed and the third body bag non-transparent and not sealed
 - After the body has been placed in the triple body bag, the remains must be placed in a non-transparent coffin which is lined with 5cm saw dust to prevent any potential leakages.
- The import/export permit, death certificate and written declaration by an institution responsible for packaging the human remains that transportation of human remains will not constitute a health hazard must accompany the human remains at all times.
- No person must open the coffin or remove the human remains after they have been sealed without prior approval from an Environmental Health Practitioner.

In the case of importation;

- Environmental Health Practitioner (EHP) at a point of entry must inform forensic pathology of the arrival of the human remains for transportation to a mortuary of the designated hospital.
- EHP at a point of entry must monitor the removal of the remains from the conveyance to the forensic pathology vehicle.
- EHP at a Municipal level must monitor the handling of the human remains after arrival at the designated mortuary.

In the case of exportation;

- The human remains must be transported from the mortuary of a designated hospital to the point of entry by Forensic Pathology in consultation with the embassy of which the deceased holds residence.
- EHP at a Municipal level must monitor the handling of the human remains at the designated mortuary.
- EHP at a point of entry must monitor the removal of the human remains from the forensic pathology vehicle to the conveyance.

Management (handling, movement, storage and burial) of human remains of a person who died of 2019-nCoV

- Handling of the Human Remains must be strictly monitored by **EHP** throughout the process.
- Human remains shall be placed in a leak proof triple body bag both first two bags shall be transparent and sealed while the third one shall be non-transparent and unsealed.
- After the body has been placed in the triple body bag, the remains must be placed in a non-transparent coffin.
- The human remains must be transported in a manner that is in compliant with the provisions of the Regulations Relating to the Management of Human Remains.
- The Human remains are considered contagious and should be kept only in designated health facilities' mortuaries.
- Human Remains can only be transferred from one designated facility to another designated facility or from such to a cemetery or crematorium.
- Under no circumstances shall the human remains be directly handled, whether for aesthetic, hygiene preparations, cultural or religious reasons.
- The human remains may not be embalmed or viewed by breaking the seals of first two bags but by opening the third bag.
- Where it is feasible and acceptable to family culture and/or religion, it is strongly recommended that the remains be cremated.
- In all cases, remains should not be kept in households for vigil or any purpose but be kept in designated health facility mortuary premises and directly transported from designated health facility mortuary straight to place of burial or cremation or the home on the day of burial/cremation.
- The body should be buried in a sufficiently deep grave to prevent access by rodents and carnivores.
- Human remains shall be placed in a triple body bag both first two bags shall be transparent and sealed while the third one shall be non-transparent and unsealed zip-up body bag with handles and appropriate BIOHAZARD warning tag written "hazard Group 4 Pathogens" before transporting to designated health facility mortuary.

- All bags, bins and boxes must be adequately sealed, as not to leak any fluids, and must be wiped down with 0.05% chlorine solution before being stored or removed.

1.7 Handling of Suspected or Confirmed 2019-nCoV case mortal remains.

- If patient dies in transit, the EMS Provincial coordinator and Provincial CDC must be notified. A decision on where to take the corpse must be communicated to the ambulance crew.
- Provincial Environmental Health must be informed.
- Under no circumstances will the corpse be removed from ambulance other than at assigned facility that was communicated to ambulance crew.
- The corpse must be placed in double body bags that are fluid leak proof. The bags must be wiped down with a 0.05% chlorine solution before leaving the ambulance.

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9.13 Appendix 13 – Communicable Diseases Outbreak Report Format

TITLE	
PERIOD	
LOCATION	
DISTRICT	
PROVINCE	

Executive summary

.....

I. Introduction:

- Background
- Reasons for investigation (public health significance, threshold met, etc.)
- Investigation and outbreak preparedness

II. Methods:

- Dates of investigation
- Site(s) of investigation (health care facilities, villages, other)
- Case finding (indicate what was done regarding case finding, e.g., register review, contact investigation, alerting other health facilities, other)
- Lab specimen collection
- Description of response and intervention (include dates)
- Data management

III. Results:

- Date and location of first known (index) case
- Date and health facility where first case was seen by the health care system
- Results of additional case finding
- Lab analysis and results
- With text, describe key features of results of time, place, and person analysis
- For detailed results by time (epi curve), place (map), and person characteristics (tables) and line lists
- Results of response and evidence of impact

IV. Self-evaluation of the timeliness and quality of preparedness, outbreak detection, investigation, and response

Epidemic Preparedness

Indicator	Yes	No
-----------	-----	----

Were adequate medical supplies available at the onset of the outbreak		
Were clinical guidelines available to health workers?		
Does the district epidemic management committee regularly meet as part of epidemic preparedness?		

Outbreak Detection

Indicator	Date 1	Date 2	Interval
Interval between onset of index case (or occurrence of an unusual cluster at the community level) [date 1] to arrival of first outbreak case at the health facility [date 2] (Target: <3 days)			
Interval between initial outbreak case seen at the health facility (or date of outbreak threshold crossing at the health facility) [date 1] and reporting to the district health team [date 2] (Target: within 24 hours)			
Cumulative interval between onset of index case (or occurrence of an unusual cluster at the community or health facility) [date 1] to notification to the district [date 2] (Target: <7 days)			

Outbreak investigation

Indicator	Yes	No
Were case forms and line lists completed?		
Were laboratory specimens taken (if required)?		

Indicator	Date 1	Date 2	Interval
Interval between notification of district [date 1] and district field investigation conducted [date 2] (Target: within 48 hours)			
Interval between sending specimens to the lab [date 1] and receipt of results by the district [date 2] (Target: 3-7 days, depending on type of test)			

Outbreak response:

Indicator	Date 1	Date 2	Interval
Interval between notification of outbreak to district [date 1] and concrete response by the district [date 2] (Target: within 48 hours of notification)			

Evaluation and Feedback:

Indicator	Date 1	Date 2	Interval
Interval between end of the outbreak [date 1] and finalization of outbreak report with case forms/line list sent to national level [date 2] (Target: 2 weeks)			
Indicator	Yes	No	
Did the outbreak management committee meet to review investigation results?			
Was feedback given to health facilities and community?			

V. Evaluation of other aspects of the response:

.....
.....

VI. Interpretations, discussion, and conclusions:

.....
.....

VII. Recommended public health actions:

Comment on following levels: community, health facility, district, partners, provincial, and national

.....
.....

District Epidemic Committee Chairperson:

Name: _____

Signature: _____

Date report completed: _____

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9.14 Appendix 14 – Contact details (email address and telephone) of stakeholders involved in supporting outbreak response.

Institution/Province	Name	Email address	Telephone number
National Department of Health			
Communicable Disease Control	Tsakani Furumele	Tsakani.Furumele@health.gov.za	012 395 8096 / 0824199686
Malaria, Vector-borne and Zoonotic Diseases	Devanand Moonasar	Patric.Moonasar@health.gov.za	082 578 3107
	Wayne Ramkrishna	Wayne.Ramkrishna@health.gov.za	082 317 4687
Port Health	Funeka Bongweni	Funeka.Bongweni@health.gov.za	012 395 9728 / 0609930107
Environmental Health	Murdock Ramathuba	Murdock.Ramathuba@health.gov.za	012 395 8518 / 0814150093
Emergency Medical Services	Raveen Naidoo	Raveen.Naidoo@health.gov.za	012 395 821
	Ahmed Bham	Ahmed.Bham@health.gov.za	012 395 9636 / 0735716392
Hospital Services	Keneilwe Modise	Keneilwe.Modise@health.gov.za	012 395 8257 / 0829648888
Infection Prevention and Control	Ronel Steinhobel	Ronel.Steinhobel@health.gov.za	012 395 9198 / 0836275661
Provincial Communicable Disease Control Directorate			
Eastern Cape	Thomas Dlamini	thomas.dlamini@echealth.gov.za	083 378 0189
Free State	Dikeledi Baleni	balenid@fshealth.gov.za	083 757 8217
	Babsy Nyokong	nyokongb@fshealth.gov.za	082 463 7499
Gauteng	Chika Asomugha	Chika.Asomugha@gauteng.gov.za	082 330 1490
	Caroline Kesebilwe	Caroline.kesebilwe@gauteng.gov.za	083 490 8165
KwaZulu-Natal	Premi Govender	premi.govender@kznhealth.gov.za	071 609 2505

Limpopo	Marlene Freda Ngobeni Mashudu P. Mudau	Marlene.Ngobeni@dhsd.limpopo.gov.za Prudence.Mudau@dhsd.limpopo.gov.za	079 491 1909 071 678 3864
Mpumalanga	Mandla Zwane Hluphi Mpangane	MandlaZw@mpuhealth.gov.za hluphim@mpuhealth.gov.za	082 229 8893 076 522 8511 / 013 766 3411
North West	Chriseldah Lebeko	clebeko@nwpg.gov.za	082 421 7985
Northern Cape	Gloria Hottie	hottieg@webmail.co.za	072 391 3345 / 053 830 0529
Western Cape	Charlene Jacobs	Charlene.Jacobs@westerncape.gov.za	072 356 5146 / 021 483 9964
Port Health and Environmental Health			
Central Region (Gauteng, Free-State, Northern Cape)	Funeka Bongweni	Funeka.Bongweni@health.gov.za	012 395 9728 060 993 0107
Northern Region (Limpopo, Mpumalanga, North West)	Ockert Jacobs	Ockert.Jacobs@health.gov.za	012 395 9417 082 372 0556
Coastal Region (KwaZulu Natal, Northern Cape, Western Cape)	Antoinette Hargreaves	Antoinette.Hargreaves@health.gov.za	031 301 0381 083 460 0935
Emergency Medical Services (EMS)- see table below			

National Institute for Communicable Diseases (NICD)			
Hotline (24-hours)	Doctor-on-call		082 883 9920
Deputy Incident Manager	Ann Mathews	annm@nicd.ac.za	066 0463581
Laboratory	Anne von Gottberg	annev@nicd.ac.za	082 572 0057
	Nicole Wolter	nicolew@nicd.ac.za	083 285 8708
	Jinal Bhiman	jinalb@nicd.ac.za	066 363 4511
Case Management	Kerrigan McCarthy	kerriganm@nicd.ac.za	0798717278
Epidemiology and Surveillance	Sibongile Walaza	sibongilew@nicd.ac.za	083 657 4741
	Jackie Kleynhans	jackiek@nicd.ac.za	
	Genevieve Ntshoe	genevien@nicd.ac.za	
Designated Hospitals			
Eastern Cape:			041 405 2255
Livingston Hospital			
Free State:			051 405 1911
Pelonomi Hospital			
Gauteng:			011 717 1000
Charlotte Maxeke Hospital			
KwaZulu-Natal:			033 897 3000
Greys Hospital			
Limpopo:			015 287 5000
Polokwane Hospital			
Mpumalanga:			013 741 6100

Rob Ferreira Hospital			
North West: Klerksdorp Hospital			018 406 4600
Northern Cape: Kimberley Hospital			053 802 9111
Western Cape: Tygerberg Hospital			021 938 5454

Provincial EMS Managers

PROVINCE	Contact Details	Contact Persons
National Department of Health: EMS & Disaster Medicine Directorate	012 395 9636 / 081 324 4555 012395 9636 / 073 571 6392	Mr Raveen Naidoo (Director) Mr Ahmed Bham (EMS Operational Manager – Disaster Medicine)
Gauteng	011 564 2211 / 072 433 7450 011 564 2021	Mr. J.P. Von Benecke Mr Kgati Malebane (Director EMS)
Western cape	012 937 0300 082 568 6489 / 021 948 9908	Mr. Arthur van Heerden Dr S De Vries (Director EMS)
Kwazulu Natal	0834571242 083 501 1955 / 033 846 7237	Mr M Mabaso Ms B Zungu (Director EMS)
Free State	0609856082 082 659 1600 / 051 408 1855	Mr R Ruiters (Provincial EMS Ops Manager) Dr Joe Khoali (Director EMS)
North West	082 335 6034 / 018 473 0324	Mr B Redlinghys (Director EMS)
Limpopo	082 040 5494 082 440 0802 / 015 295 2999	Mr F Masegela Dr Clive Sibanda (Director EMS)
Northern Cape	053 802 2280 / 053 831 1954/5 083 335 6034 / 053 831 2884	Mr R. Dreyer Mr M Ntintelo (Director EMS)
Mpumalanga	013 753 2288/ 082 907 3256 013 766 3302 / 082 828 6223	Mr. Scosh Mkhonto Mr Zungu (Director EMS)
Eastern Cape	060 572 9172 / 060 572 9172	Mr AK Munilil (Director EMS)