PROCEDURE FOR CASE MANAGEMENT FOR A SUSPICION OF A MIDDLE EAST RESPIRATORY SYNDROME (MERS) CORONAVIRUS INFECTION

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In collaboration with

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1. Is the patient a possible MERS patient?

Based on the WHO case definition[1], the following patients should be considered as possible cases and further investigated:

- sudden onset of respiratory infection[2]
  - fever or history of fever (≥ 38°)
  - AND cough
  - AND onset within the last 10 days
- AND clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (pneumonia or Acute Respiratory Distress Syndrome)
- AND
  - who resided or travelled in the 14 days before symptom onset in a country where MERS-CoV is known to be circulating in dromedary camels or where human infections have recently occurred[3]
  - OR were part of a cluster of two or more epidemiologically linked cases under investigation of MERS-CoV within a two-week period

OR

- sudden onset of respiratory infection[4]
  - fever or history of fever (≥ 38°)
  - AND cough
  - AND onset within the last 10 days
- AND
  - who had a close contact with a laboratory-confirmed MERS-CoV case (travelling, working or living together) in the 14 days before symptom onset
  - OR visited a health care institution where laboratory-confirmed MERS-CoV patients were treated in the 14 days before symptom onset
  - OR contact with camels, camel environments or consumption of camel products (e.g. raw camel milk, camel urine) in a country where MERS-CoV is known to be circulating in dromedary camels.[5]

[1] Middle east respiratory syndrome Case definition for reporting to Who Interim case definition 26 July 2017 https://www.who.int/csr/disease/coronavirus_infections/mers-interim-case-definition.pdf

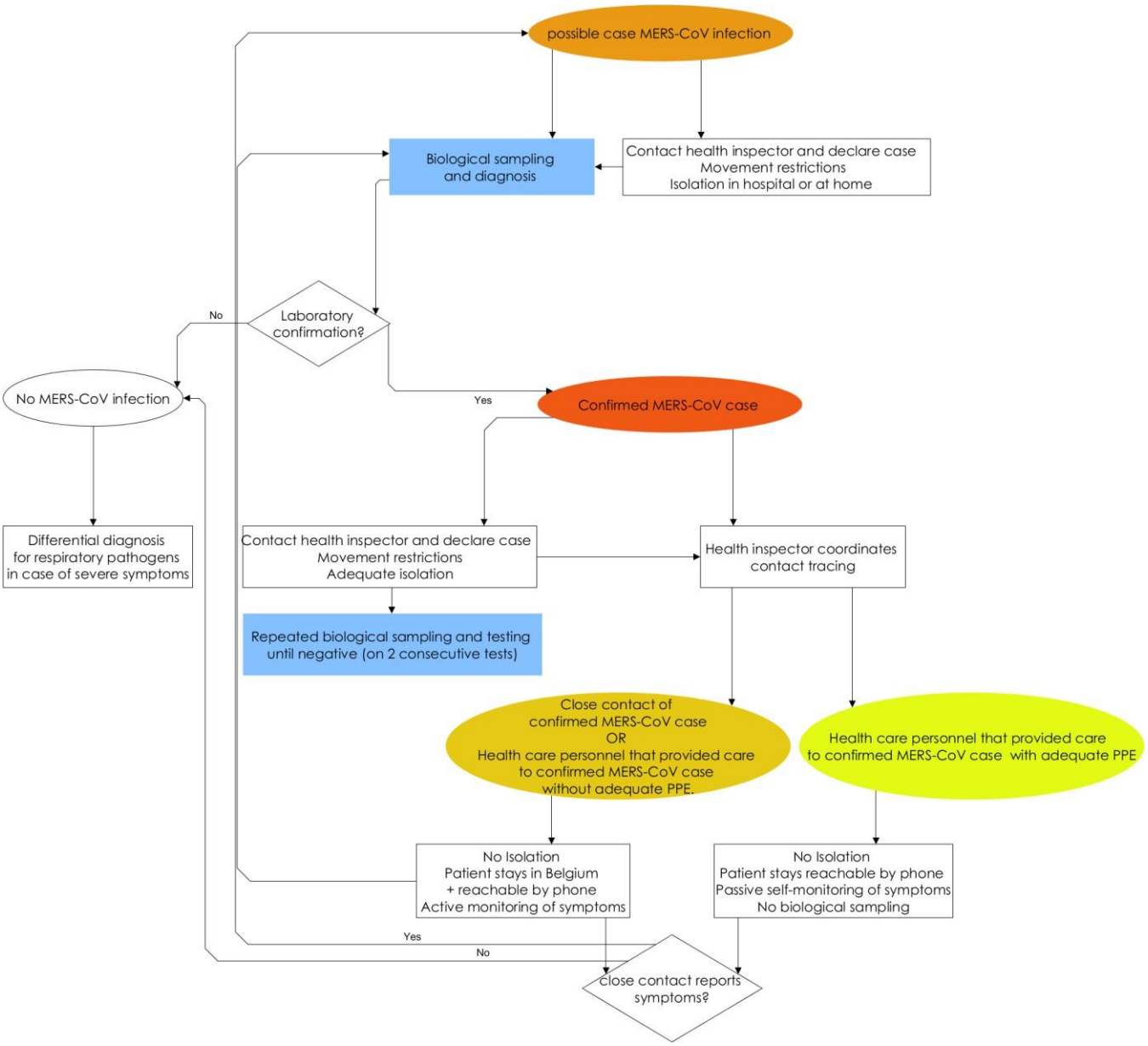
[2] Atypical presentations are possible in immunocompromised patients including absence of fever

[3] Countries that have reported human cases in the Middle East since 2012 include Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia (KSA), United Arab Emirates (UAE) and Yemen. In 2019, only Saudi Arabia and Oman have reported cases. (https://www.who.int/csr/don/archive/disease/coronavirus_infections/en/)

[4] Atypical presentations are possible in immunocompromised patients including absence of fever

[5] In the literature up till now in the following countries, there was evidence that MERS-CoV is circulating in dromedary camels: Bangladesh, Burkina Faso, Canary Islands, Ethiopia, Egypt , Ethiopia , Iraq, Israel, Jordan , Kenya, Mali, Morocco, Nigeria, Oman, Pakistan , Saudi Arabia (KSA), Somalia, Sudan, Tunisia, UAE.
There is at present no evidence of circulation in Australia and Kazakhstan.

2. Decisional flowchart



3. Indications for laboratory testing

In general, laboratory testing for MERS-CoV is indicated in the following circumstances:

1. Confirmation (or exclusion) of possible MERS patients
2. Criteria of removal of quarantine for the confirmed cases.
3. Early diagnosis of MERS-CoV infection among close contacts of confirmed cases

For each of these scenarios, a procedure will be described in this document.

4. Case management of possible MERS-CoV Patients

4.1. CONTACT THE REGIONAL PUBLIC HEALTH AUTHORITIES

Complete the questionnaire in annex and contact the regional health authority.

- Vlaanderen:

  Within office hours: https://www.departementzorg.be/nl/contact-infectieziektebestrijding-en-vaccinatie

  outside office hours: 02/512.93.89

- Brussel Hoofdstedelijk Gewest: 0478/77.77.08 or 02/552.01.67

- Wallonie (AVIQ): 071/20.51.05

4.2. COLLECT BIOLOGICAL SPECIMENS FROM THE POSSIBLE CASE AND PERFORM LABORATORY TESTING

4.2.1. Collecting and sending the samples

Immediately collect

- upper (oropharyngeal and nasopharyngeal swabs, see Annex B) and , unless impossible, lower respiratory tract samples (sputum, BAL)
- and a serum sample (+ collect second sample minimum 21 days later)

and send (using triple package systems) the samples to the NRC Respiratory Pathogens after contacting Prof. Marc Van Ranst (0475/510158) or Lies Laenen (016/345283).
The accompanying lab request form can be downloaded from https://www.wiv-isp.be/epidemio/nRC/foRMs/aanvraagformulier_respiratoire.pdf (page2 for UZ Leuven)

4.2.2. WHO definition of laboratory confirmation

A MERS-CoV infection may be laboratory confirmed by detection of viral nucleic acid or serology:
The presence of viral nucleic acid can be confirmed by either

- positive results for nucleic acid amplification assays, such as reverse transcription polymerase chain reaction (Rt-PCR), for at least two specific genomic targets

or

- a single positive target with sequencing of a second target.

A case of MERS confirmed by serology requires demonstration of sero-conversion in 2 samples ideally taken at least 14 days apart, by a screening (ELISA, IFA) and a neutralization assay.

Be aware that the detection of another respiratory pathogen does not exclude a MERS-CoV co-infection.

For more detailed information, see also the WHO documents

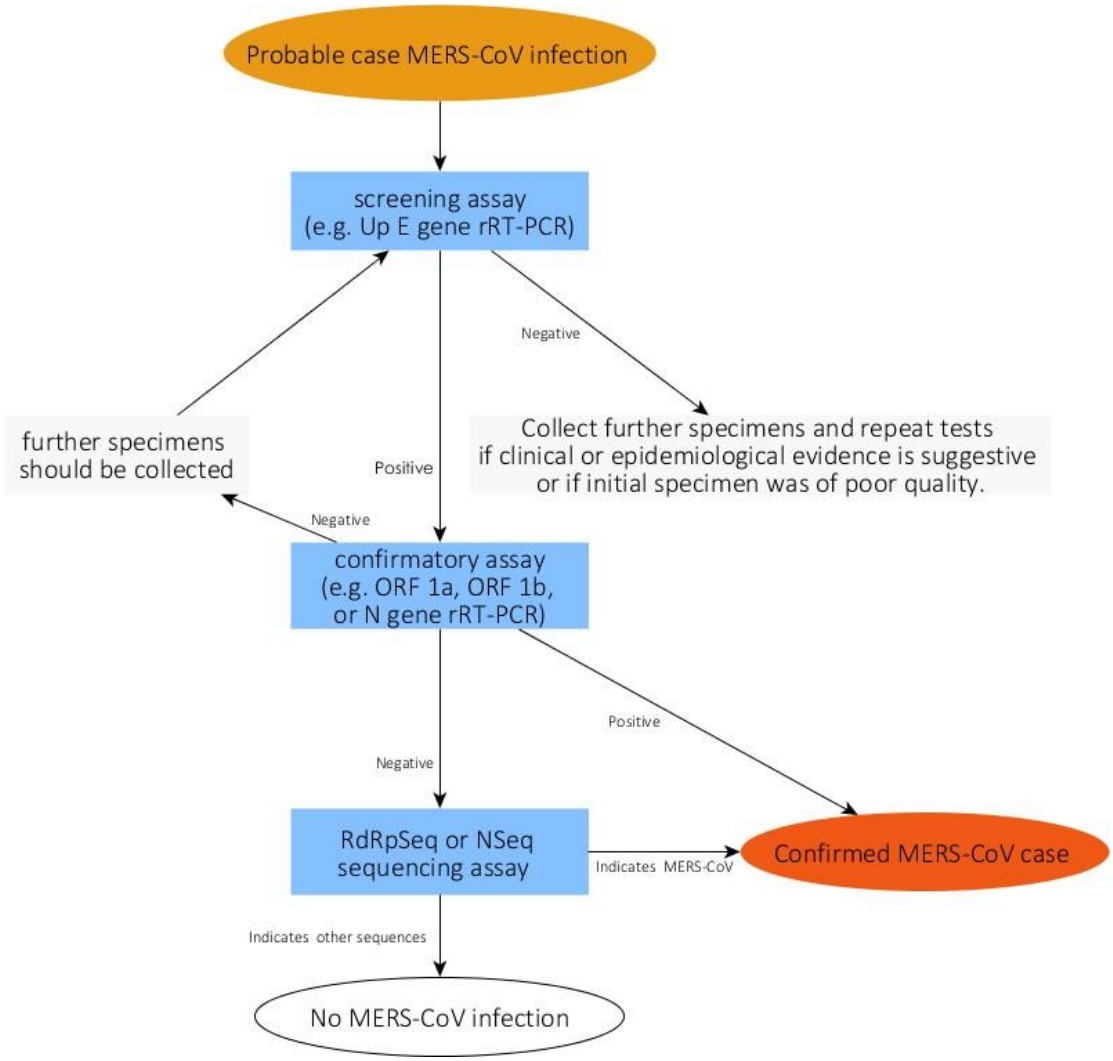
- "laboratory testing for Middle east respiratory syndrome coronavirus (MERS-CoV) Interim guidance updated June 2015"[6] and
- "Investigation of cases of human infection with Middle East respiratory syndrome coronavirus (MERS-CoV) Interim guidance updated 3 July 2015"[7]

4.2.3. WHO definition of an inadequate specimen

An inadequate specimen would include

- a nasopharyngeal swab without an accompanying lower respiratory specimen
- a specimen that has had improper handling, is judged to be of poor quality by the testing laboratory, or was taken too late in the course of illness.

[6] https://apps.who.int/iris/handle/10665/176982
[7] https://apps.who.int/iris/handle/10665/178252



4.2.4. Procedure in case of an inconclusive laboratory test

Patients with an inconclusive initial test should undergo additional virological and serological testing to determine if the patient can be classified as a confirmed MERS case.

It is strongly advised that multiple lower respiratory tract specimens such as sputum, endotracheal aspirate, or bronchoalveolar lavage fluid be collected and tested.

If initial testing of a nasopharyngeal swab is negative in a patient who is strongly suspected to have MERS- CoV infection and if lower respiratory tract specimens are not possible, then patients should be retested by repeat nasopharyngeal and oropharyngeal specimens and appropriately timed paired acute and convalescent sera.

Other types of clinical specimens could also be considered for molecular testing if necessary, including blood/serum, urine and stool. These generally have lower titers of virus than respiratory tract specimens but have been used to confirm cases when other specimens were inadequate or unavailable.

4.3. TAKE INFECTION CONTROL PRECAUTIONS

4.3.1. Hospital or home isolation

- The patient should avoid contact with others, certainly people with increased risk[8]
- Symptomatic patients with milder symptoms and without underlying conditions may be cared for in the home environment.
- Confirmed and possible symptomatic cases with severe symptoms or with underlying conditions should be admitted to hospital whenever possible[9,10], most preferably to the reference hospital (CHU Saint-Pierre, during working hours: 02/535.50.09; outside working hours: 0479/83.80.13 or 02/535.31.11).
- The decision to transfer the ill person from home observation to the hospital should be made based on either clinical or laboratory findings or both. For the benefit of the patient, it is preferable to transfer patient as soon as possible. The risk of rapid clinical deterioration is high in confirmed cases. In that case, the transfer becomes more risky for the patient and more difficult to organize.

4.3.2. Transport of the patient under investigation

- Transport of patient to the hospital needs to be discussed with the regional health authorities.
- Use a dedicated ambulance. CHU Saint Pierre has a convention with an ambulance company (M2, 02/411.11.21) for transportation of possible and confirmed MERS cases to St Pierre. The personnel of this company are specifically trained for this work and have the required PPE (and even PAPR) mask.
- While traveling to seek care, the patient should wear a medical mask, perform appropriate hand hygiene and respiratory hygiene and should stay as far away from others as possible. Open the windows of the vehicle if possible.
- Avoid public transportation to the health care facility.
- Healthcare workers who are transporting patients should wear appropriate personal protective equipment (gown, FFP2 mask, eye protection and gloves) and perform hand hygiene.
- Surfaces soiled during transport should be cleaned with regular household cleaners and broad spectrum disinfectant product.

4.3.3. Duration of isolation

- A possible MERS patient is isolated until the laboratory test as described in chapter 4.2.2 is negative. If initial testing of only an upper respiratory specimen is negative in a patient suspected of having MERS-CoV infection, repeat testing should be performed[11].
- A confirmed MERS patient is isolated until two consecutive upper respiratory tract samples (oropharyngeal swabs) taken at least 24 hours apart test negative on Rt-PCR in a clinically recovered patient (can last beyond 27 days).[12]
- Collect lower respiratory tract samples specimens and repeat tests if clinical or epidemiological evidence is suggestive or if initial specimen was of poor quality.

[8] The groups currently considered to be at increased risk for MERS-CoV infection include: those with chronic heart, lung or kidney conditions; diabetes, immunosuppression, blood disease and adults over 60 years of age. Currently there is no evidence to suggest increased risk for the MERS-CoV infection for pregnant women, but it may be prudent to prevent them from contact with the ill person. (https://apps.who.int/iris/bitstream/handle/10665/272948/WHO-MERS-IPC-18.1-eng.pdf?ua=1).

[9] see "Rapid advice note on home care for patients with Middle east respiratory syndrome coronavirus (MERS-CoV) infection presenting with mild symptoms and management of contacts. Who, 2013."

[10] https://ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/Middle-east-respiratory-syndrome-coronavirus-risk-assessment-25-april-2014.pdf

[11] https://apps.who.int/iris/bitstream/handle/10665/178252/WHO_MERS_SUR_15.2_eng.pdf?ua=1

[12] Management of asymptomatic persons who are RT-PCR positive for MERS-CoV: Interim guidance. Geneva, Switzerland: World Health Organization; 2018.

4.3.4. Infection prevention and control measures in case of home or hospital isolation

Patients with possible/confirmed MERS-CoV infection require standard, droplet (when home isolation), contact and airborne precautions (when hospital isolation).[13]

	Home Isolation	Hospital Isolation
Isolation	- Limit contact with the ill person as much as possible (different room, > 1 m distance). - Anyone who is at increased risk[14] of severe disease does not care for the ill person or come into close contact with the ill person. - Avoid other types of exposure to the ill person or contaminated items in the immediate environment of the ill person; for example, avoid sharing eating utensils, drinks, towels, washcloths or bed linen.	- Patient in single room or, in case of confirmed patient, with patients with same diagnosis - Transportation of patient outside of designated room is kept to a minimum + patient should wear medical mask if outside room - Dedicate specific equipment for use with single patient In case of clinical deterioration: a separate icu room.
Hygiene	- Hand hygiene following all contact with the ill person or his/her immediate environment and immediately after removing any item of PPE - Respiratory hygiene and cough etiquette	
PPE	- Within a 1 meter range: caregiver should wear a medical mask + remove safely immediately afterwards - Health carer should avoid touching face, eyes or mouth with (gloved) hands - Use disposable gloves and protective clothing (e.g. Plastic aprons) to provide oral or respiratory care, when handling stool and urine and when cleaning or handling surfaces, clothing or linen soiled with body fluids.	- At every entry of the room: use gloves, gown, eyewear and FFP2 mask + remove safely immediately afterwards - Health carer should avoid touching face, eyes or mouth with (gloved) hands

[13] For more detailed information, see

- "Rapid advice note on home care for patients with Middle east respiratory syndrome coronavirus (MeRs-CoV) infection presenting with mild symptoms and management of contacts. Who, 2013."
- "Infection control strategies for specific procedures in health-care facilities: a quick reference guide: epidemic-prone and pandemic-prone acute respiratory diseases. Who, 2008."
- "Clinical management of severe acute respiratory infection when Middle east respiratory syndrome coronavirus (MeRs-CoV) infection is suspected. Who, 2015."

[14] The groups currently considered to be at increased risk for MERS-CoV infection include: those with chronic heart, lung or kidney conditions; diabetes, immunosuppression, blood disease and adults over 60 years of age. Currently there is no evidence to suggest increased risk for the MERS-CoV infection for pregnant women, but it may be prudent to prevent them from contact with the ill person. (https://apps.who.int/iris/bitstream/handle/10665/272948/WHO-MERS-IPC-18.1-eng.pdf?ua=1).

	Home Isolation	Hospital Isolation
Ventilation/when performing aerosol-generating procedures	Shared spaces (e.g. kitchen, bathroom) and the ill person's room should be well ventilated (e.g. keep windows open)	- Place patient in airborne precaution room with >= 6-12 air changes/hour plus control of airflow direction - use particulate respirator when entering and providing care within patient isolation facilities
Cleaning and laundry	– Discard materials used to cover the mouth or nose, or clean them appropriately after use (e.g. Use disposable tissues using regular soap or detergent and water). – Eating utensils and dishes should be cleaned with soap and water after use. – Clean frequently touched surfaces such as bedside tables, bedframe, and other bedroom furniture daily with regular household cleaners or a diluted bleach solution (1 part bleach to 99 parts water). – Clean bathroom and toilet surfaces daily with regular household cleaners or a diluted bleach solution (1 part bleach to 9 parts water). – Clothes, bedclothes, bath and hand towels, etc., of the ill person can be cleaned using regular laundry soap and water, and dried thoroughly. Place contaminated linen into a laundry bag. Soiled laundry should not be shaken and direct contact of the skin and clothes with the contaminated materials from the ill person should be avoided.	
Waste management	Gloves, tissues, masks, and other waste generated by the ill person or in the care of the ill person should be bagged (placed in a lined container in the ill person's room) before disposal with other household waste.	

5. Case management of a confirmed MERS-CoV Patient

5.1. CASE DEFINITION

A confirmed case is a person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms. Confirmatory laboratory testing requires a positive PCR on at least two specific genomic targets or a single positive target with sequencing on a second.

5.2. CONTACT THE REGIONAL PUBLIC HEALTH AUTHORITIES

See chapter 4.1 for contact details.

The regional public health authorities will list the close contacts and advise on testing and adequate precautions for these contacts.

5.3. TAKE INFECTION CONTROL PRECAUTIONS

5.3.1. Hospital or home isolation

See chapter 4.3.1

5.3.2. Transport of the patient under investigation

See chapter 4.3.2 .

5.3.3. Duration of isolation through sample collection

- Collect at least weekly (but preferably each 2 - 4 days) a (upper) respiratory tract sample.
- Following the first negative Rt-PCR test, collect daily a (upper) respiratory tract sample.
- The patient is isolated until two consecutive upper respiratory tract samples (oropharyngeal swabs) taken at least 24 hours apart test negative on Rt-PCR in a clinically recovered patient (can last beyond 27 days).[15]
- See chapters 4.2.3 and 4.2.4 for information on inadequate specimens and inconclusive test results and for details on the NRC Respiratory Pathogens.

5.3.4. Infection prevention and control measures in case of home or hospital isolation

Airborne precautions will be applied to hospitalized patients with confirmed MERS-CoV infection (for further details see chapter 4.3.4).

[15] Management of asymptomatic persons who are RT-PCR positive for MERS-CoV: Interim guidance. Geneva, Switzerland: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.

5.3.5. Identification and listing of contacts of confirmed cases by the regional health authorities

Once a case is confirmed, the health inspectors will identify contacts by asking about the activities of the case and the activities and roles of the people around the case since onset of illness.

All persons considered to have had significant exposure should be listed as contacts by the regional health authorities.

Efforts should be made to identify every listed contact and inform them of their contact status, what it means, the actions that will follow, and the importance of receiving early care if they develop symptoms. The contact should also be provided with preventive information.

5.3.5.1. Case definition close contact

A close contact is defined as

- a healthcare worker or family member providing direct patient care
- or anyone who had prolonged (>15 minutes) face-to-face contact with a confirmed symptomatic case in any closed setting,
- or to have had a direct epidemiological link with a confirmed symptomatic case.

5.3.5.2. Contact tracing on flights

It is advisable for countries to trace contacts of confirmed MERS cases on flights in accordance with the guidelines for SARS contact tracing in RaGIda[16], regardless of flight time.

- Flight attendants should follow the IATA guidelines for infection control.
- Captains should radio ahead to the destination airport, informing officials of a possible MERS-CoV case on board.
- If a passenger is suspected of having MERS-CoV infection during a flight, the potentially infectious passenger should be isolated and provided with a surgical face mask.
- Once the MERS diagnosis is confirmed then contact tracing needs to be organized.
  - > Passengers should provide identification and contact details to the health authorities within 14 days of the flight (in order to facilitate contact tracing).
  - > Priority for contact tracing efforts should be given to:
    - passengers seated in the same row as the case
    - passengers seated two rows in front or behind the case
    - all crew members
    - passengers providing care for the case
    - passengers living in the same household as the case.

[16] European Centre for disease Prevention and Control. Risk assessment guidelines for infectious diseases transmitted on aircraft (RaGIda) - Influenza. Stockholm: ECDC; 2014

- passengers having had >15 minutes of face-to-face contact with the case
- passengers having had contact with respiratory secretions of the case

> Depending on the clinical presentation of the case during the flight and feasibility, extending the tracing of contacts beyond three rows to possibly include all passengers may be considered.

> If a crew member is the index case and if all passengers cannot be contacted, efforts should concentrate on passengers seated in the area where the crew member was working during the flight. In addition, all other members of the crew should be traced.

6. Follow-up of close contacts of a confirmed MERS-CoV patient

The close contacts, listed as described in chapter 5.3.5, are followed-up according to their status.
A distinction is being made between

- Asymptomatic close contact of confirmed MERS-CoV case
- Health care workers (HCW) with unprotected exposure to confirmed cases
- Health care workers with protected exposure to confirmed cases

6.1. FOLLOW-UP OF ASYMPTOMATIC CLOSE CONTACTS OF CONFIRMED MERS CASE AND OF UNPROTECTED HCW

6.1.1. Isolation measures

These close contacts who did not have appropriate protection during the contact with the confirmed case, should not be isolated.
There are no strict restrictions for work or social movement, but mass gathering events should be avoided.
The person should remain in Belgium and be reachable by phone until day 21 after last exposure (follow-up serology).

They should actively monitor the following symptoms until day 14 after the last exposure:

- twice daily temperature measurements (rectal or oral)
- alert for symptoms: fever and/or cough and/or diarrhea

The persons should actively be contacted daily by the health inspector or the treating physician.
If they develop one of the above symptoms, they should be treated as possible cases.

6.1.2. Biological sampling

The following samples should be taken from the contact person:

On day 7 after the exposure

- oropharyngeal sample
- a serum sample

Collect on day 14 after exposure

- oropharyngeal sample

Collect on day 21 after exposure

- serum sample

The samples should be sent (using triple package systems) to the NRC Respiratory Pathogens after contacting Prof. Marc Van Ranst (0475/510158) or Lies Laenen (016/345283). The details regarding the organization of transport can be discussed with the health inspector.
The accompanying lab request form can be downloaded from
https://www.wiv-isp.be/epidemio/nRC/foRMs/aanvraagformulier_respiratoire.pdf (page2 for UZ Leuven)

6.2. FOLLOW-UP OF ASYMPTOMATIC PROTECTED HCW

6.2.1. Isolation and monitoring

Protected HCW should not be isolated.
There are no restrictions for work or social movement.
The person should remain reachable by phone until day 21 after the last exposure.

Protected HCW should monitor the symptoms themselves until day 14 after the last exposure and contact the health inspector in case they develop symptoms:

- twice daily temperature measurements (rectal or oral)
- alert for symptoms: fever and/or cough and/or diarrhea

and should from then on be treated as possible cases.

6.2.2. Biological sampling

No biological sampling is required as long as the protected HCW remains asymptomatic.

Annex A Lab request form

REFERENTIECENTRUM VOOR RESPIRATOIRE PATHOGENEN

GELIEVE HET STAAL SAMEN MET DIT INGEVULD FORMULIER OP TE STUREN NAAR:

Professor Katrien Lagrou
UZ Leuven, Dienst Laboratoriumgeneeskunde,
Herestraat 49, B-3000 Leuven
Tel. 016/34.70.98-Fax. 016/34.79.31-Email: katrien.lagrou@uzleuven.be

Code Labo

***GEGEVENS OVER HET LABORATORIUM DAT HET STAAL OPSTUURT**

Naam klinisch bioloog: .....
Naam laboratorium: .....
Tel: ..... Fax: .....
Emailadres: .....
Naam+ RIZIVnr aanvragende arts: .....
.....

***PATIENTGEGEVENS OF STICKER**

Naam: .....
Geslacht: ❑ M ❑ V
Geboortedatum: .....
Rijksregisternr: .....
Straat+nr: .....
Postcode of woonplaats: .....
Nationaliteit: .....
Recent verblijf buitenland: ❑ ja ❑ neen
Zo ja, land of streek: .....

***GEGEVENS OVER HET STAAL**

Identificatienummer: .....
Afnamedatum: .....

❑ keelwisser ❑ sputum
❑ biopt (niet gefixeerd) ❑ BAL
❑ nasopharyngeale (flocked) swab
❑ nasopharyngeaal aspiraat
❑ CSV (*M. pneumoniae*) eiwitgehalte.....mg/dl
%lymphocyten ..... glucosegehalte.....mg/dl
Aantal cellen ❑0-5 ❑6-10 ❑11-49 ❑>50
❑ conjunctivale wisser (adenovirus)
❑ andere .....
❑ Resultaat Gram kleuring .....
❑ Resultaat kweek .....

ANDERE BELANGRIJKE GEGEVENS

Indien van toepassing, bvb mogelijke urgentie van analyse

***KLINISCHE GEGEVENS**

Datum begin symptomen:.....
Antibioticabehandeling voorbije 48h ❑ ja ❑ nee ❑ onbekend
als ja welk.....
Hospitalisatie ❑ ja ❑ nee
als ja : ❑ infectieziekten ❑ intensieve zorgen
❑ spoedgevallen ❑ pediatrie
❑andere.....
RX pneumonie: ❑ ja ❑ nee ❑ onbekend
Koorts ❑ ja ❑ nee
Hoest ❑ ja ❑ nee
Conjunctivitis ❑ ja ❑ nee
Kortademig ❑ ja ❑ nee
Onderliggend longlijden ❑ ja preciseer..... ❑ nee
Immunodeficiënt ❑ ja preciseer..... ❑ nee
Hoofdpijn ❑ ja ❑ nee
Spierpijn ❑ ja ❑ nee

Meningitis ❑ ja ❑ nee
Encephalitis ❑ ja ❑ nee

Vermoeden van uitbraak: ❑ ja ❑ nee
❑ Index ❑ contactgeval
Naam index .....
Relatie tot index.....

AANGEVRAAGDE TESTEN NRC

5785 ❑ PCR *M. pneumoniae* (BAL)
5786 ❑ PCR *M. pneumoniae* (Bovente luchtwegen)
5787 ❑ PCR *M. pneumoniae* (Aspiraat)
5788 ❑ PCR *M. pneumoniae* (CSV)
5789 ❑ PCR *M. pneumoniae* (Longbiopt)

15601 ❑ Respiratoir panel** (BAL) (enkel in geval van uitbraak)
12534 ❑ Respiratoir panel** (Bovenste luchtwegen) (enkel in geval van uitbraak)
11504 ❑ Respiratoir panel** (Aspiraat) (enkel in geval van uitbraak)

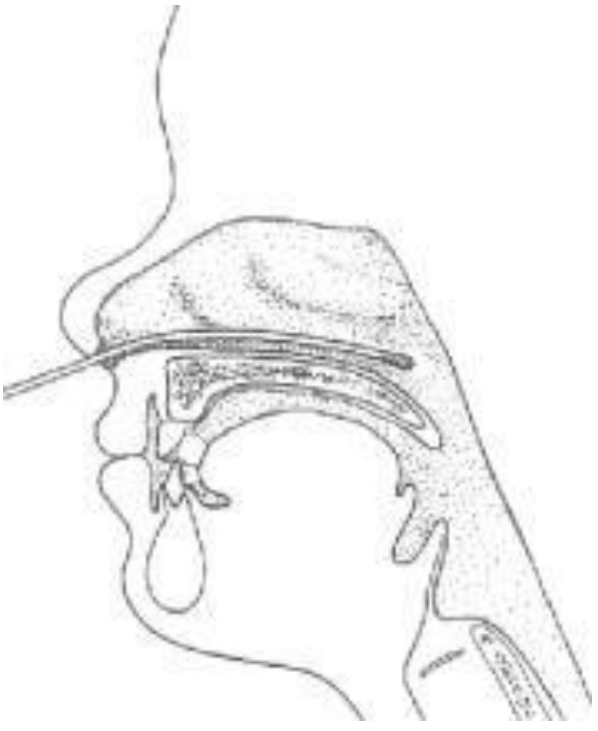
** inclusief SARS en MERSCoV

***Verplicht in te vullen** **Aanvraagformulier respiratoire 27092017.doc**

Annex B Sampling procedures

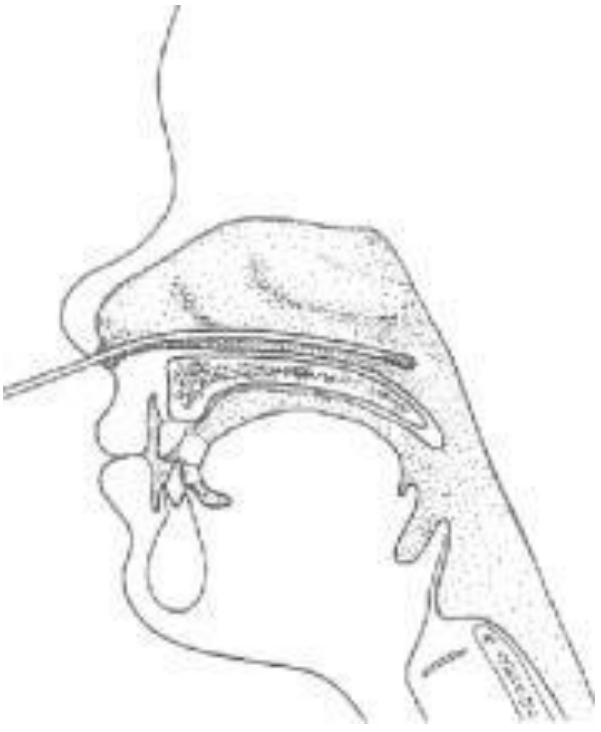
PROCÉDURE DE PRÉLÈVEMENT POUR LES FROTTIS NASOPHARYNGÉS

- Matériel: coton, dacron ou de préférence “flocked swabs” dans un milieu de transport universel ou de virus
- A l’aide d’un premier écouvillon prélever le plus possible de cellules en introduisant l’écouvillon profondément dans une narine et effectuer quelques mouvements de rotation. Procéder de même au niveau de l’autre narine.
- Mettre l’écouvillon dans le tube de transport et casser l’extrémité de la tige. Puis à l’aide d’un deuxième écouvillon, procéder de même au niveau des zones inflammatoires au fond de la gorge (amydales). Mettre l’écouvillon dans le tube contenant le milieu de transport et casser l’extrémité de la tige. Fermer de tube hermétiquement.
- Identifier l’échantillon:
  - Référence du patient: il doit s’agir d’un code
  - La date de prélèvement
  - Médecin: coordonnées du médecin qui a réalisé le prélèvement.
- Placer le sachet “minigrip” dans un emballage parfaitement hermétique
- Tous les échantillons doivent être conservés à 4°C avant l’envoi



HOE NASOFARYNGEALE STALEN NEMEN?

- Materiaal: katoen, dacron of liefst “flocked swabs” in een universeel- of virustransportmilieu
- Breng een eerste wattenstaafje diep in het neusgat en maak zoveel mogelijk cellen los door langs de binnenkant van een neusgat te schrapen. Ga met hetzelfde wattenstaafje op dezelfde manier te werk om een staal te nemen van het andere neusgat.
- Plaats het wattenstaafje in de tube met transportmilieu en breek het uiteinde van de steel af.
- Ga met het tweede wattenstaafje op dezelfde manier te werk om een staal te nemen van de ontstoken zones in de keel (amandelen, keelwand, etc.). Plaats het wattenstaafje in de tube met transportmilieu en breek het uiteinde van de steel af.
- Sluit het flesje hermetisch.
- Het staal identificeren:
    - Referentie van de patiënt: onder de vorm van een code
    - Datum van staalname
    - Arts: Coördinaten van de behandelende arts die het staal heeft afgenomen.
- Plaats de transporttube in een “Minigrip” zakje en sluit hermetisch
- In afwachting van verzending, bewaar de stalen in de koelkast (+4°C).



Annex C Questionnaire for patients with possible or confirmed MERS-CoV infection

Clinical data

Hospital Reference: _____

Date of the notification____/____/____(dd/mm/yyyy)

Institution_____

Identification of the person notifying the case (name, function, e-mail, telephone)

_____

Identification of the patient

Sex ☐ M ☐ F

Date of birth (dd/mm/yyyy)_____/____/____or age (year if >=2, months if < 2years)

Country of residence: _____

The patient is health professional ☐ yes ☐ no unknown

Hospitalisation

Date of hospitalisation (dd/mm/yyyy) : ……/……../.....Referred

from other hospital/institution ☐ yes ☐ no

If referred, specify:

Signs and symptoms

Date of onset (dd/mm/yyyy) ____/____/_____

Temperature >38°C ☐ yes ☐ no ☐ unknown

History of t° ☐ yes ☐ no ☐ unknown

Cough ☐ yes ☐ no ☐ unknown

Dyspnoea ☐ yes ☐ no ☐ unknown

ARDS ☐ yes ☐ no ☐ unknown

Other significant:

X-ray

Thoracic X-ray ☐ yes ☐ no

Infiltrate/pneumonia ☐ yes ☐ no

Severity at admission

ICU ☐ yes ☐ no

Mechanical ventilation ☐ yes ☐ no

Referred to other hospital ☐ yes ☐ no

If referred, specify:

Laboratory samples

Date of the sample (dd/mm/yyyy) …./…./….

Sent to reference laboratory ☐ UZ Leuven ☐ NRC Influenza at Sciensano ☐ no

First serum taken (acute phase) ☐ yes ☐ no date (dd/mm/yyyy) …./…./….

Second serum taken (convalescence) ☐ yes ☐ no date (dd/mm/yyyy) …./…./….

Epidemiological data

Exposure

Contact with a confirmed case in the 14 days before onset?

☐ yes ☐ no ☐ unknown

If yes, specify (country, date, event):

_____

_____

_____

Contact with animals in a foreign country in the 14 days before onset?

☐ yes ☐ no ☐ unknown

If yes, specify (country, date, event):

_____

_____

_____

History of travel in a foreign country in the 14 days before onset ☐ yes ☐ no

If yes, fill in the following table:

Country	Place	from dd/mm/yyyy	to dd/mm/yyyy

Flight coordinates at departure (for any flight in the last 14 days)

Airport	Company	Flight nb	Seat nb	Date	Time