

## 29. SPECIFIC TERMS OF REFERENCE FOR THE NRC FOR RESPIRATORY PATHOGENS: ADENOVIRUS, CORONAVIRUS INCLUDING SARS AND MERS, HUMAN PARAINFLUENZA VIRUS, INFLUENZA VIRUS, *MYCOPLASMA PNEUMONIAE*, *CHLAMYDIA PNEUMONIAE*, RESPIRATORY SYNCYTIAL VIRUS (RSV), HUMAN METAPNEUMOVIRUS (HMPV)

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### AIMS

- Each National Reference Centre (NRC) must meet both the general and the specific terms of reference.
- In the specific terms of reference, the NRC tasks dedicated to each selected pathogen or group of pathogens are described.
- These aim to guarantee the knowledge, the know-how and the epidemiological surveillance expertise of each NRC.
- The task list is not exhaustive and can be modified in function of the requirements and the evolution of knowledge and techniques.
- In the event a NRC is unable to perform a specific task, this can be subcontracted to preserve the knowledge in the NRC. If this is the case, quality of the subcontracted task has to be proven and assured.
- Each list of specific terms of reference is divided into three parts: 1) a reminder of the specific missions, 2) a description of the tasks that the NRC must be able to do including the competencies and 3) a list of the tasks that will be asked in a particular context.
- The type of analysis indicated for each specific pathogen in each particular situation (diagnosis or confirmation, typing, sensitivity to antimicrobial substances, virulence...) is defined.
- The collaboration with national and international surveillance systems (e.g. ECDC) and when relevant with other reference centres (European Medicines Agency, food safety reference centres, veterinary reference centres, ...) is also a priority.

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### SPECIFIC MISSIONS

1. To confirm and notify the diagnosis of rare respiratory infectious diseases (i.e. MERS CoV, SARS CoV).
2. To monitor circulating respiratory infectious diseases by performing microbial typing.
3. To study the antibiotic susceptibility for *Mycoplasma pneumoniae*.
4. To collaborate with existing structures and networks including the surveillance framework for ARI and ILI contributing to the epidemiological follow up of the seasonal activity of respiratory pathogens.
5. To investigate an outbreak of severe ARI of unknown aetiology by appropriated methods (viral culture, electronic microscopy ...).
6. To participate in national surveillance, transfer microbiological data (through e-health reporting) in order to describe the periodic appearance of respiratory diseases and contribute to the presentation and interpretation of the results in a public health approach.
7. To interact with epidemiologists and other NRC's with the aim to sustain/adapt the use of the various outputs (with regards to quality of care, recommendations for control/prevention, ...).

## ADENOVIRUS

### THE NRC MUST BE ABLE TO (LEVEL OF COMPETENCES)

1. Confirm the diagnosis by culture and/or PCR.
2. Type the strains.
3. Have access to whole genome sequencing and expertise in species specific bioinformatics analysis.

### TASKS THAT WILL BE ASKED IN A PARTICULAR CONTEXT

1. To transmit the data regularly during winter season.
2. To confirm the diagnosis by culture and/or PCR in a crisis situation (including an outbreak of conjunctivitis).
3. To record and to type a subset of circulating strains.
4. To ensure a good representativeness for surveillance purposes, including geographical coverage when relevant.

## CORONAVIRUS INCLUDING SARS AND MERS

### THE NRC MUST BE ABLE TO (LEVEL OF COMPETENCES)

1. Detect coronaviruses (HcoV-OC43, HcoV-229E, HcoV-NL63, HcoV-HKU, HcoV-SARS, MERS-CoV) by RT-PCR.
2. Perform serological tests for HcoV-SARS and MERS.
3. Perform genotyping, sequencing and phylogenetic analysis.

4. Have experience working with HcoV-SARS and MERS in a biosafety level 3 lab.
5. Have access to whole genome sequencing and expertise in species specific bioinformatics analysis.

#### TASKS THAT WILL BE ASKED IN A PARTICULAR CONTEXT

1. To detect coronaviruses including SARS and MERS by PCR and to confirm the diagnosis in a second independent centre in a crisis situation.
2. To confirm positive serology in collaboration with another lab in a crisis situation.
3. To collaborate with existing national and if relevant international crisis structures.
4. To perform the verification by laboratory testing, of the claimed performances and conformity of IVD devices, for SARS, within the Belgian EURL (European Union Reference Laboratory Network) after its designation by the European commission under Regulation (EU) 2017/746.  
<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2017:117:TOC>

## INFLUENZA VIRUS

#### THE NRC MUST BE ABLE TO (LEVEL OF COMPETENCES)

1. Confirm the diagnosis by culture and/or PCR.
2. Perform typing of the strains.
3. Have access to whole genome sequencing and expertise in species specific bioinformatics analysis.

#### TASKS THAT WILL BE ASKED IN A PARTICULAR CONTEXT

1. To perform the differential diagnosis for respiratory pathogens including influenza virus in cases of ARI.
2. To transmit the data regularly during winter season.
3. To collaborate with the NRC Influenza for further isolation, confirmation, typing and WGS of influenza virus-positive samples.
4. To confirm the diagnosis by culture and PCR in a crisis situation.
5. To ensure a good representativeness for surveillance purposes, including geographical coverage when relevant.

## HUMAN PARAINFLUENZA VIRUS

#### THE NRC MUST BE ABLE TO (LEVEL OF COMPETENCES)

1. Confirm the diagnosis by culture and/or PCR.
2. Perform typing of the strains.
3. Have access to whole genome sequencing and expertise in species specific bioinformatics analysis.

#### TASKS THAT WILL BE ASKED IN A PARTICULAR CONTEXT

1. To confirm the diagnosis by culture and PCR in a crisis situation.
2. To transmit the data regularly during winter season
3. To determine the present type (1, 2, 3, or 4) on a subset of clinical samples.

4. To ensure a good representativeness for surveillance purposes, including geographical coverage when relevant.

## **MYCOPLASMA PNEUMONIAE AND CHLAMYDIA PNEUMONIAE**

### **THE NRC MUST BE ABLE TO (LEVEL OF COMPETENCES)**

1. Confirm the diagnosis by PCR.
2. Perform the culture.
3. Determine the antibiotic susceptibility.
4. Genotype the isolated strains.
5. Have access to whole genome sequencing and expertise in species specific bioinformatics analysis.

### **TASKS THAT WILL BE ASKED IN A PARTICULAR CONTEXT**

1. To monitor the antibiotic susceptibility for antibiotics relevant for curative and preventive care.
2. To confirm the diagnosis by molecular methods in a crisis situation.
3. To transmit the data regularly during winter season
4. To ensure a good representativeness for surveillance purposes, including geographical coverage when relevant.

## **RESPIRATORY SYNCYTIAL VIRUS AND HUMAN METAPNEUMOVIRUS**

### **THE NRC MUST BE ABLE TO (LEVEL OF COMPETENCES)**

1. Perform the diagnosis by culture and/or PCR.
2. Discriminate between type A and type B RSV.
3. Identify subtypes by molecular techniques.
4. Have access to whole genome sequencing and expertise in species specific bioinformatics analysis.

### **TASKS THAT WILL BE ASKED IN A PARTICULAR CONTEXT**

1. To confirm the diagnosis by culture and/or PCR in case of patient care or in case of events of public health importance.
2. To transmit the data regularly during winter season.
3. To ensure a good representativeness for surveillance purposes, including geographical coverage when relevant.