Interim surveillance recommendations for human infection with novel coronavirus

As of 18 March 2013

Update

This document provides updated surveillance guidance for novel coronavirus (nCoV). WHO will continue to update these recommendations as more information becomes available.

Current numbers and descriptions of reported cases are found on the main WHO novel coronavirus page.

The primary changes included in this revision are:

- Addition of a recommendation to test individuals with unusually severe respiratory disease even in the presence of another aetiology if the other agent does not fully explain the patient’s illness.
- Specific revised recommendations for countries where the novel coronavirus has been detected.
- Recommendations for investigations and studies to be carried out where cases are detected, which may help describe critical clinical and epidemiological features of the virus.

Background

A number of unanswered questions remain, including the virus reservoir, the means by which seemingly sporadic infections are being acquired, the mode of transmission between infected persons, the clinical spectrum of infection and the incubation period. In 2013 a third cluster of cases now provides clear evidence of limited, non-sustained human-to-human transmission [http://www.hpa.org.uk/NewsCentre/NationalPressReleases/2013PressReleases/120319Updateoffamilyclusterofnovelcoronavirus/]. The mode of transmission has not been determined. One of the cases in the cluster originally tested positive for influenza A and was not initially thought to have infection with nCoV.

One laboratory-confirmed case and one probable case have presented with relatively mild illness with an uneventful recovery; however, most patients have had severe pneumonia. To date, there have been 15 laboratory-confirmed cases of nCoV infection, of which nine have died. Complications of their clinical course have included severe pneumonia and acute respiratory distress syndrome requiring mechanical ventilation, multi-organ failure, renal failure requiring dialysis, consumptive coagulopathy and pericarditis. At least two cases had a history of recent travel, which occurred five to ten days before onset of illness. Currently the virus has been found in a limited number of countries, mainly in the WHO Eastern Mediterranean Region. However, given the non-specific clinical presentation of the infection the presence of the virus in other areas cannot be ruled out in the absence of laboratory testing.

Objectives of surveillance

The primary objectives of the enhancements described in this document are to:

1 See: http://www.emro.who.int/landing-pages/countries/countries.html
1. Detect early, sustained human-to-human transmission.
2. Determine the geographic risk area for infection with the virus.

Additional clinical and epidemiological investigations (see table below) are needed to:

1. Determine key clinical characteristics of the infection, such as incubation period, the spectrum and natural history of the disease.
2. Determine key epidemiological characteristics of the virus, such as exposures that result in infection, risk factors, reservoir of the virus, secondary attack rates, and modes of transmission.

The following persons should be evaluated epidemiologically and tested for novel coronavirus:

1. A person with an acute respiratory infection, which may include history of fever and cough and indications of pulmonary parenchymal disease (e.g. pneumonia or the acute respiratory distress syndrome [ARDS]), based on clinical or radiological evidence of consolidation, who requires admission to hospital.

   AND any of the following:
   
   • The disease occurs as part of a cluster\(^2\) that occurs within a 10-day period, without regard to place of residence or history of travel, unless another aetiology has been identified.\(^3\)
   
   • The disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, particularly patients requiring intensive care, without regard to place of residence or history of travel, unless another aetiology has been identified.\(^3\)
   
   • Develops an unexpectedly severe clinical course despite appropriate treatment, without regard to place of residence or history of travel, even if another aetiology has been identified, if that alternate aetiology does not fully explain the presentation or clinical course of the patient.

2. A person with an acute respiratory illness of any degree of severity who, within 10 days before onset of illness, had close contact\(^4\) with a confirmed or probable case of novel coronavirus infection, while the case was ill.

\(^2\) A “cluster” is defined as two or more persons with onset of symptoms within the same 10-day period and who are associated with a specific setting, such as a classroom, workplace, household, extended family, hospital, other residential institution, military barracks or recreational camp.

\(^3\) Testing should be according to local guidance for management of community-acquired pneumonia. Examples of other aetiologies include Streptococcus pneumoniae, Haemophilus influenzae type B, Legionella pneumophila, other recognized primary bacterial pneumonias, influenza, and respiratory syncytial virus.

\(^4\) Close contact is defined as:
   
   • Anyone who provided care for the patient, including a health care worker or family member, or who had other similarly close physical contact;
   
   • Anyone who stayed at the same place (e.g. lived with, visited) as a probable or confirmed case while the case was ill.
3. For countries where the novel coronavirus has already been detected, the minimum standard for surveillance should be testing of patients with severe respiratory disease requiring mechanical ventilation. The minimum standard should include all those in three categories listed above—patients with unexplained pneumonia or ARDS occurring in clusters; health care workers requiring admission for respiratory disease and patients with unusual presentation or clinical course. However, countries where the novel coronavirus has already been detected are also strongly encouraged to consider adding testing for nCoV to current testing algorithms as part of routine sentinel respiratory disease surveillance and, if local capacity can support it, some testing of patients with milder, unexplained, community-acquired pneumonia requiring admission to hospital.

4. WHO does not advise special screening at points of entry with regard to this event nor does it recommend that any travel or trade restrictions be applied.

**Reporting**

Health care providers should report all cases meeting the confirmed or probable case definition immediately, to national authorities, through established reporting channels.

National Authorities are requested to report all probable and confirmed cases within 24 hours of classification, through the Regional Contact Point for International Health Regulations at the appropriate WHO Regional Office. See current definitions for probable and confirmed cases at: [http://www.who.int/csr/disease/coronavirus_infections/case_definition/en/index.html](http://www.who.int/csr/disease/coronavirus_infections/case_definition/en/index.html).

**Investigations and applied epidemiological studies around cases of novel coronavirus infection**

Many of the critical questions regarding the clinical manifestation and epidemiological characteristics of novel coronavirus infection will be answered only by careful, detailed investigations around cases. The following provides some guidance on the types of studies that should be considered. WHO is currently working with technical partners to develop standard protocols and data collection instruments for this purpose, which will be posted when they are finalized. Contact WHO at the email address listed at the bottom of this document if technical support is needed.

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<th>Investigations around confirmed cases of novel coronavirus infection</th>
<th>Purpose</th>
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<td>Complete data collection on clinical history, presentation, occurrence of complications, important laboratory and X-ray findings, and course of illness.</td>
<td>Describe the clinical presentation and natural history of infection.</td>
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<tr>
<td>Investigation of potential exposures in the last 10 days before onset of illness. Include travel history, exposures to animals (type of animals and type of contact), exposures to other patients with acute respiratory infections, including exposures in health care settings, and consumption of raw foods and unprocessed beverages, Collect detailed information on time, duration, and intensity of exposure and type of contact.</td>
<td>Determine the source of infection and type of exposure.</td>
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Contact tracing, including contacts in household, workplace, school and social settings. Careful history should be taken with regard to the timing of contact with sick individuals and the onset of illness. Contacts should be tested with polymerase chain reaction (PCR) and acute and convalescent serology. Information on the severity and course of illness should be collected from even mildly symptomatic contacts who are tested for virus.

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<th><strong>Applied epidemiological studies</strong></th>
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<td>Where resources allow, countries with sporadic cases of presumed locally acquired infection are also strongly encouraged to consider undertaking applied epidemiological studies recommended below.</td>
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- **Serological survey of health care workers working** in the environment where cases are cared for. Survey should include those not directly involved in care but working in the same ward or unit as well as those who provide intermittent care, such as radiologists, respiratory and physical therapists, etc. Include information on timing, duration, and intensity of contact, type of interaction, use of personal protective equipment (PPE), and other potential exposures outside of health care setting (e.g. animals in the home environment).

- **Investigations for recent increases in respiratory disease activity in the community.** This would include review of local hospital admission records and outpatient records of selected general practitioners in the community where infection is thought to have been acquired.

- **Retrospective testing of stored specimens from patients with respiratory disease.**

- **Retrospective testing of stored animal specimens for presence of nCoV or antibodies.**

- **Serological surveys of potentially exposed groups of individuals such as animal workers, market workers, health care workers, and office workers (as a comparison group).** Detailed information should be collected from each participant on the type and degree of exposure.

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