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## Evaluation of the Current Situation of Novel Coronavirus infection, and Development of Surveillance and Medical Systems in Japan

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### ■ Evaluation of the Current Situation

In the early hours of January 31 (Japan time), the emergency committee of the World Health Organization (WHO) announced that the current status corresponds to a Public Health Emergency of International Concern (PHEIC), in consideration of the situation, in which the number of cases of pneumonia associated with the novel coronavirus totaled 7711 (including 170 deaths [2%]) in all provinces in China, and 83 in 18 countries outside of China (as of January 30) <sup>1)</sup>.

Limited epidemiological information is being accumulated regarding the novel coronavirus infection detected in Wuhan City, China. The incubation period has been reported to range from 2 to 10 days<sup>2)</sup>. Human to human transmission has been also reported outside of China. The severity of symptoms ranges from mild to severe. Among the reported cases, as of January 30, severe cases accounted for 20%<sup>2)</sup> while fatal cases in China accounted for 2% <sup>4)</sup>.

Information including the detailed mode of transmission and the potential period during which the infection can be transmitted is important for determining domestic actions. However, at present, sufficient knowledge has not been obtained. Since the outbreaks of severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome (MERS-CoV) were caused by droplet transmission and contact infection, the same can be assumed for the novel coronavirus <sup>5)</sup>. As for SARS-CoV, epidemiological and virological studies have not shown infection during the incubation period <sup>6)</sup>.

With respect to nosocomial infections in Wuhan, on January 21, the Western Pacific Regional Office of the WHO mentioned, for the first time, infections among such healthcare professionals. To date, infections among healthcare professionals in Wuhan City, China <sup>7)</sup>, as well as familial infections both inside and outside of China <sup>5,8)</sup> have been reported.

As of January 31, approximately 4000 patients <sup>9)</sup> with novel coronavirus infection were also reported in 30 provinces or cities outside of Hubei in China. However, no information regarding the onset of community-acquired infection outside of Wuhan City in China has been obtained.

As of January 31, 12 confirmed cases have been reported in Japan. Of these cases, 10 persons had a history of travel to Wuhan.

## ■ Domestic Response

Confirmed cases have also been continuously reported outside of Wuhan. Since the mode of transmission has not been determined, at present, it is necessary to assume that the novel coronavirus may be imported to Japan via mild cases, as a matter of course. However, in the current situation, where the pretest probability is not sufficiently high, it is not realistic to try to detect all novel coronavirus infection cases, including mild cases, at quarantine stations and domestic medical institutions. Basic infection control measures such as cough etiquette and hand hygiene are important. Because the risk factors for exacerbation have not yet been identified, the most important issue to be addressed is the detection of moderate or severe cases of novel coronavirus infection, such as pneumonia, in Japan. In addition, since there is insufficient knowledge on specific treatments, it is necessary to gather information on treatment in foreign countries, and to accumulate domestic findings.

- ◆ Case detection system: At present, the following three types of detection systems for the novel coronavirus infection have been prepared in Japan. The system in 1) below is planned to be used for detecting moderate level or higher novel coronavirus infections that are linked to Wuhan.
  - 1) In cases of patients with symptoms of pneumonia who have traveled to Wuhan, a framework has been set up where genetic tests for the novel coronavirus can be conducted under the surveillance system for suspected disease carriers (“Response to Novel Coronavirus Infection and Measures for Nosocomial Infection [updated on January 21]”).
  - 2) The “Guidelines for Active Epidemiological Investigation in Patients with Novel Coronavirus (nCoV) Infection (tentative version) (as of January 28)” were prepared, and a framework has been set up where genetic tests for the novel coronavirus can be conducted under Article 15 of the Infectious Disease Law, at the onset of the novel coronavirus infection, in people in close contact with confirmed cases.
  - 3) In the surveillance system for suspected disease carriers, it is possible to detect severe infections of unknown cause, and take the necessary public health measures (including tests for the novel coronavirus), irrespective of a history of travel to Wuhan City.
  
- ◆ Test system: Based on genomic information disclosed by China, the National Institute of Infectious Diseases (NIID) prepared to perform conventional PCR testing and handled the testing. In addition, NIID distributed reagents on January 23 to enable conventional PCR tests at public health institutes. On January 24, the test system using real-time PCR developed by NIID was completed, and the test method at NIID was changed to the real-time PCR method. In addition, according to this change, reagents for the real-time PCR method were distributed to public health institutes and quarantine stations from January 30 to 31. The guidance on sample collection and transportation for conducting tests by NIID according to case detection systems 1) and 2), above was published on the website of the NIID on January 21. The guidance on sample collection and transportation has been updated, and the latest version was published on January 24.
  
- ◆ Actions for mild cases and asymptomatic pathogen carriers of the novel coronavirus infection (including suspected cases): For persons who have symptoms but no need for hospitalization, with a history of travel to epidemic regions such as Wuhan City, appropriate measures should be taken to prevent infection, in addition to isolation at home. In addition, public health centers

should appropriately monitor their symptoms and, if the symptoms deteriorate, consider responding to the case using the above-mentioned detection system 1) (See the “Response to Novel Coronavirus Infection and Measures for Nosocomial Infection [updated on January 21]”, and “Hospital Discharge and Follow-up Policy for Patients with Novel Coronavirus Infection [draft]).”

- ◆ Infection control for confirmed cases, etc.: See “Response to Novel Coronavirus Infection and Measures for Nosocomial Infection (updated on January 21).”
  - ◆ Discharge criteria for confirmed cases, etc.: See “Hospital Discharge and Follow-up Policy for Patients with Novel Coronavirus Infection (draft).”
  - ◆ The Japanese government promulgated a Cabinet Order designating the novel coronavirus infection as a "Designated infectious disease" under the Infectious Disease Control Law and a "Quarantinable Infectious Disease" under the Quarantine Act, and enforced it from February 1. According to the Cabinet Order, it is possible to admit persons with a suspected infection into the hospital, and conduct an associated examination and laboratory tests in quarantine operations, which are covered by public health.
- Actions Required in the Future
- ◆ Guidelines for treatment of novel coronavirus infections: In Japan, it is necessary to detect patients with severe novel coronavirus infection as early as possible, and prepare for appropriate treatment. Collection of findings and preparation of guidelines should be conducted by appropriate persons, including infectious disease specialists and intensive care physicians.
  - ◆ According to new findings on epidemiological information, changes in the case definition will be considered, as appropriate. The contents of this document will be also revised in response to such changes in case definition, as appropriate.
  - ◆ Infection control: Necessary documents will be prepared in response to new findings on nosocomial infection. Please refer to "Guide for the Management of Novel Coronavirus Infection<sup>9)</sup>" by the Japanese Society for Infection Prevention and Control.
  - ◆ Response to community outbreaks: Assuming that the novel coronavirus may be imported into Japan through mild cases, and outbreaks of the novel coronavirus may occur in the community, it is necessary to consider countermeasures.
  - ◆ Response to outbreaks at medical institutions: Assuming that, starting with the novel coronavirus infection that are not detected, outbreaks of the infection may occur in medical institutions, it is necessary to consider countermeasures.
  - ◆ Test system: As the number of test cases at public health institutes may increase in the future, the accuracy of the tests at these institutes should be ensured. At present, information about the

samples that are suitable for testing is scarce, and it is recommended in the sample collection manual that various types of samples be collected. In the future, with an increase in the number of test cases, the handling of test samples may be changed. According to the circumstances, the “Manual for Collection and Transportation of Samples from Suspected Cases of 2019-nCoV (Novel Coronavirus) Infection (January 24)” will be updated.

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