Coronavirus disease-2019

As of April 3rd

General information

Introduction:

Coronavirus disease-2019 (COVID-19) is a disease caused by severe-acute respiratory syndrome coronavirus-2 (SARS-CoV-2). This disease was identified firstly in Wuhan, China as pneumonia with unknown cause on December 2019. In mid-January 2020, researchers in China successfully identified the new virus and provided the basic information of the SARS-CoV-2 genome sequence. At the same time, due to the Lunar New year holiday, a lot of people in China travelled around the world and the global transmission was started.

As of March 30th, more than 150 countries have reported SARS-CoV-2 infection with more than 690,000 positive cases[1]. World Health Organization (WHO) declared COVID-19 as a pandemic on March 11th. It means that the outbreak was occurred worldwide. Most of the affected countries have difficulties to contain the outbreak due to the complexity of social consequences.

Pathogen:

SARS-CoV-2 is an enveloped, positive sense single-stranded RNA virus belonging to family *Coronaviridae* genus *Betacoronavirus*. Other human-pathogenic viruses identified are clustered in this genus, such as middle east respiratory syndrome coronavirus (MERS-CoV) and SARS-CoV-1 which causes MERS (from 2012) and SARS (in 2003), respectively. The viruses (HCoV-229E and HCoV-OC43) that cause common cold also belong to this genus.

As an enveloped virus, SARS-CoV-2 genome is packed inside the double layered lipid structure along with transmembrane protein e.g. membrane glycoprotein, hemagglutinin-acetylesterase glycoprotein and spike glycoprotein. Coronavirus mainly characterized by the spikes that form a crown-like structure. This structure is responsible for viral infection into human cells[2].

Transmission:

SARS-CoV-2 is transmitted by direct contact with an infected person or contaminated objects via droplets (sneezing, cough, saliva). Under the experimental condition, SARS-CoV-2 can remain on the surface of plastic and stainless steel until 72 hours. Furthermore, spreading of SARS-CoV-2 in hospital setting is of concern due to the virus ability to remain infectious in aerosols[3].

Symptoms:

In the early phase, COVID-19 mainly causes fever, fatigue and shortness of breath. The symptoms may appear around 2-14 days after exposure[4]. In the late phase, pneumonia is observed in the patients.

Diagnostic:

To date, the golden method to detect SARS-CoV-2 is quantitative real-time reverse-transcriptase PCR (qRT-PCR) assay. This assay targets viral genome in the swab samples

collected from patients or suspected persons. Besides, many nationalities also using serologic test that detect antibody (immunoglobulin M (IgM) and/or IgG) from blood sample.

Current situation:

1. Worldwide
   - Disease transmission
     To date, the center of infection has shifted from China to Italy then to United States of America. Most of the positive cases were reported due to contact tracing with the cases. The diseases transmission is not only depending on imported cases, but the existence of local transmission. Identification of a new cluster (group of positive cases which emerge at the same time and place) as soon as possible being one of the keys to control the local transmission.

   - Lockdown, quarantine and isolation
     Some countries have locked down their territories to prevent a massive spreading of COVID-19 to improve the health facilities, and try to find the best anti-viral and develop a good vaccine. They quarantined the people from the infected area at least for 14 days and isolate all the patients.

   - For more information, you can access WHO situation reports on https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports

2. Japan
   - First case of local transmission
     The first COVID-19 case of local transmission in Japan was identified in Tokyo at the end of January, from a bus driver which have contacted with a group of tourists from China. From there, the government conducted contact-tracing for everyone who had the history to close contact with the cases.

   - Current situation
     As of April 3rd, 2020, COVID-19 cases in Japan have been reported from 44 out of 47 prefectures with the highest positive cases reported in Tokyo, followed by Osaka, Kanagawa, Chiba, Aichi, and Hokkaido.

   - COVID-19 situation in Hokkaido
     The first case of COVID-19 in Hokkaido was identified in late January from a tourist from Wuhan, China. Since then, Hokkaido had a rapid increase of the positive cases. From February 28th to March 19th, the governor of Hokkaido Prefecture declared the emergency status for Hokkaido prefecture. During that time, most of the people were asked not to leave their home during weekend, refrained from visiting crowded places and did not make any after work parties.

     For more information about COVID-19 in Hokkaido, please visit:
     ➔ Website: http://www2.hiecc.or.jp/soudan/emg/index.html?lang=en
     ➔ Facebook: @Whatsoninsapporo
     ➔ Twitter: @PrefHokkaido (in Japanese)

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What should I do if …

Importance and purpose

*You might not show symptoms even if you are infected, but you may be spreading the virus.

*Protect yourself from COVID-19 is important but it is also important to protect people around you in case you are infected.

*Please avoid going to hospital due to just feeling anxiety but no symptoms.

What should I do if …….

1. If I am sick now. Government set the definition of COVID-19 cases. If you meet any of the criteria below, please contact to call center. Tel: 001-272-7119
   a. You have fever above 37.5°C and fever doesn't go away for 4 days.
   b. Feeling tired badly (Fatigue) or difficulty in breathing (Dyspnea).
   c. You are old (65 years or older), have underlying disease (Diabetes, heart disease, respiratory disease) or under chemotherapy with symptoms above (a or b) for 2 days.

   If my family/housemate is sick and relevant to #1, please contact to the call center, and follow guideline from government. See detail→**COVID-19 preventive measures**

2. If I may have/ had contact with a COVID-19 case. Have chatting without protection (like masks) and face to face within 2 meters for a while.

About call center
http://www.pref.hokkaido.lg.jp/ss/tkk/koronasoudantoiawase.html

Hokkaido Foreign resident Support Center
http://www.hiecc.or.jp/soudan/en/

General Information about Corona in English
http://www.clair.or.jp/tabunka/portal/info/contents/114517.php

Where should I call in Sapporo?

Emergency or you have symptoms now
→ 011-272-7119

General question about COVID-19.
→ 0120-565653

COVID-19 preventive measures

Importance: aimed at limiting and delaying COVID-19 spread and tracing all contacts or healthy carriers and spread of COVID-19

COVID-19 can be transmitted easily: (or high-risk occasions for COVID-19 transmission)

- When droplets by close contact during talking, chatting or eating
- By contaminated fomites (when handling infected tools or objects, shaking hands, …)
- In close and unprotected contact with COVID-19 sick person or prolonged contact with asymptomatic person

Warning: protect yourself and protect other persons

Classical health measure at individual or community level can protect everyone from COVID-19

Individual hygiene measures

- Hand hygiene practices to reduce risk of infection from direct contact with contaminated fomites. Wash hands using water and soap, hydroalcoholic solution or clean hands with alcohol based wet wipes.
- When coughing or sneezing, cover the mouth and nose with a tissue-paper to contain droplets
- Wear facemask if you have cold or cough to limit the risk of being infected or shedding virus by droplets
- Discard tissue-paper or used facemask in a trash cane
- Don't greet by shaking hand, kissing or embracing
- If you have fever or cold, call directly (toll free call)
- If you have been in contact with somebody who is suspected or confirmed COVID-19 diseased, call a medical staff (toll free call)
- Make attention to sharing items (computer, phone, ….)
- Avoid touching your face, eye or nose with you hand

Community-based measures

Warning: People who do not show symptoms can spread COVID-19. Protect yourself or other people

Community containment: Isolation / quarantine and keep social distancing.

- Avoid close contact at the individual level and social meetings to limit virus spread
- Movement limitation or self-isolation: Stay at home to avoid any contact with any sick person or SARS-CoV-2 healthy carriers or when having respiratory symptoms
- Social distancing, keep at least 1m distance each other persons (especially those with fever, cold or cough)
- When you have fever, Cough or chill and respiratory symptom, stay at home and report your situation to (toll free call) for early identification and isolation or wear mask to go to hospital
- Report any sick person and help to save lives and identify COVID-19 carriers
- Avoid crowded place

References

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Challenges

1. Asymptomatic Cases

The main way to spread the virus is by droplet from an infected person. People with symptoms shed high amount of virus and are the primary source of infection if not isolated and treated[1]. However, some infected people develop no symptoms[2]. These infected people without symptoms may pass on the virus to others accidentally or unknowingly. Some reports point to this possibility. For example, in China some members of a family who had contact with an infected person a day before they showed symptoms later tested positive to COVID-19[3]. A report from Singapore in which several people developed symptoms days after contact with infected persons before they developed symptoms also raise the possibility of pre-symptomatic transmission[4].

2. Unknown information

There are reports of positive test to the virus after recovery[5]. It is unknown if these cases were reinfection or the viral particles detected where remnants of the previous infection. It is unclear if such cases can spread the virus. There is also limited information of virus neutralizing capacity of antibodies in recovering patients. Such information can help in determining the immunity of recovered patients and help in development of vaccines. Yet still, treatment of COVID-19 is unknown. There is still no approved drug nor vaccine for use against COVID-19 yet.

3. Diagnostic methods

The rapid transmission of COVID-19 requires a rapid and accurate diagnostic test. The available qRT-PCR test used for confirmation of COVID-19 has shown varied ability to detect positive cases of COVID-19[6,7]. When combined with Chest X-ray, detection of patients with symptoms is improved. Several new tests with improved detection ability in a short period are being developed and evaluated.

Suggestions:

1. There should be increased collaboration between scientists and policy makers in government to help better understand the COVID-19 disease and use such knowledge to make effective control measures.
2. Improved case definition for diagnosis to include mild cases of COVID-19.
3. Intensified contact tracing to identify exposed persons. This should include contacts during the asymptomatic phase of the disease as there is a possibility of transmission before symptoms occur.
4. The government should improve information sharing system. For example, to the extent possible share the information used as a basis for a decision. This will help public understand the rationale of the decision and avoid misunderstanding or misinterpretation.

References

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