



YEDİTEPE UNIVERSITY

NOVEL CORONAVIRUS INFECTION (COVID-19) BASIC GUIDE



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Coronaviruses (CoV) are a large group of viruses of which effects ranging from mild infection charts such as a common cold that is seen everywhere throughout the society and limiting itself, to more severe infection charts such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).

Coronaviruses have various sub-types which can pass from human to human easily (HCoV-229E, HCoV-OC43, HCoV-NL63 ve HKU1-CoV). These sub-types among humans mostly cause cold symptoms. On the other hand, there are many sub-types of Coronaviruses that are observed in animals and known to cause severe infection charts by transmitting from animals to human. With detailed research, SARSCov has been transmitted from palm civets and MERS-Cov is transmitted from one-humped camels.

On 31 December 2019, World Health Organization (WHO) China Country Office have reported on pneumonia cases of which etiology is unknown in China's Wuhan city in the state of Hubei. On 7 January 2020, a new type of coronavirus (2019-nCoV) has been identified that has never been observed in humans.

Afterwards, the name of 2019-nCoV disease is accepted as COVID-19 and, due to the similarity of the virus to SARS CoV, it has been named Sars-CoV-2. World Health Organization classified the COVID-19 outbreak as an "international public health emergency" on 30 January and due to the observation of virus outside of China, where it was first observed, in 113 countries, the spread of the virus and the severity of it, the status is redefined as a global outbreak (pandemic) on 11 March.

The first case of our country has been recorded on 11 March after Europe and neighboring countries such as Iran.

1 GENERAL INFORMATION

1.1. Epidemiology

On 31 December 2019 pneumonia cases of which etiology is unknown in China's Wuhan city in the state of Hubei, have been reported. It has also been recorded that there is a clustering at the Wuhan South China Marine Products City Market (a livestock and fish market where many various animal types are sold) at the south of Wuhan on 31 December 2019. The cases have recorded high body temperature, shortness of breath and findings that are in line with radiological bilateral lung pneumonic infiltration. According to the COVID-19 report of the WHO about China, most of the deaths have been recorded among elderly or those who have a systemic disease (primarily high blood pressure, diabetes, cardiovascular diseases, cancer, chronic lung diseases and other immunosuppressive conditions).

The cause of the pneumonia clustering reported on 31 December 2019 have been defined as a new type of coronavirus that has never been seen in humans before 7 January 2020. After this date, the patient numbers rose rapidly and some healthcare personnel have been reported to show symptoms. The disease spread rapidly due to its nature of human-to-human transmissions.

The first COVID-19 case have been observed in our country on 11 March 2020. Afterwards, like everywhere else in the world, our country has seen a rise of cases as well. As of 31 December 2019, a total of 224 million people have been infected in the world and there have been 4.6 million casualties. The fight against the pandemic is ongoing in our country and throughout the world.

2 COVID-19 Infection chain consists of a source, transmission channel and susceptible people.

2.1. The source reservoir of SARS-CoV-2 is still being researched. All the present evidence about COVID-19 leads the humanity to believe that SARS-CoV-2 has a zoonotic source. Also, while uncertain at the moment, the data at hand points to the wild animals sold at Huanan Marine Products Wholesale Market. Due to its human-to-human transmission ability, COVID-19's source is symptomatic / asymptomatic positive cases.

2.2. Transmission channel The disease is primarily spread with droplets. Also, the droplets coming out of ill people by coughing or sneezing might be carried to mouth, nose or eye mucosa by healthy people and contact with them. As asymptomatic patients showed virus presence in their respiratory tract secretion, these people can be infectious. Generally, the incubation period is 2-14 days. The infectivity period of COVID-19 is not known for certain. It is estimated that it starts prior to the symptoms for 1-2 days and ends with the disappearance of symptoms.

2.2.1. Infectivity, Viral Load starts 1-2 days before the viral spread symptoms start and at the time of throat swabs, the viral load peaks during the first emergence of symptoms. While they rapidly drop in the first seven days, this process can be extended to While they rapidly drop in the first seven days, this process can be extended to beyond the second week. While the virus can be observed as a positive in the stool after the second week of disease, as there is only one case of reproduction of the virus from stool and no reported cases of infection in that way, it has been considered that it is not possible to have any sort of infection possibility apart from oral. Virus can be observed in blood and urine scarcely and it has been deemed that the virus do not present a danger to the blood

banks. Also, there have been no recorded cases of virus observation in milk, vaginal swabs and sperm. Viral load is heavier on elderly people and it is an important indicator of the severity and progression of the disease. It has been observed that there is a 60-times more viral load in more severe cases than in milder cases. banks. Also, there have been no recorded cases of virus observation in milk, vaginal swabs and sperm. Viral load is heavier on elderly people and it is an important indicator of the severity and progression of the disease. It has been observed that there is a 60-times more viral load in more severe cases than in milder cases.

Coronaviruses are generally not very durable in external environment. The time of durability depends on the humidity and temperature of the environment, the amount of organic matter that the virus has been extracted from the body and the texture of the infected surface.

Generally, it has been accepted that it loses all its activity after a few hours on inanimate surfaces. While considering the activity period on inanimate surfaces, it should not be forgotten that infection does not only depend on the virus activity, but also the duration of contact.

2.2.2. Everyone who are not immune to COVID-19 are susceptible for infection.

Healthcare personnel is the riskiest group of people in terms of encountering the disease. Men, people above 50 years of age, people with an underlying disease (High Blood Pressure, Coronary Diseases, Diabetes, Cancer, COPD, Kidney Diseases etc.), seasonal agricultural workers and rehabilitation centers as well as people in schools, army bases, prisons and immigration camps are susceptible to COVID-19. Basic Reproduction Number: R_0 : It is the definition of how many people an infected person can infect in a wholly susceptible society in a certain term. If the R_0 factor is higher than 1, each infection causes more than one infection. The disease will transmit among humans and might cause a pandemic.

Social Immunity Level: It means the case that if a certain amount of people become immune to an infectious disease, the society becomes immune as a whole. If R_0 is considered as 2.2, the social immunity level has been determined as 60% for COVID-19.

2.3. Clinical Features The efforts conducted during the pandemic provides new information about the natural course of COVID-19. At the beginning of the pandemic, the common symptoms of an infection were coughing, shortness of breath and fever. With the new variants, there are additions to these symptoms. Symptoms such as running nose and skin irritations, which were not among the initial symptoms, have been added with the emergence of new variants. While the disease might proceed with no symptoms or mild symptoms, in more severe cases, pneumonia, severe acute respiratory tract infection, kidney failure and even death.

The death rate is reported as 11% in SARS pandemic and 35-50% in MERS-CoV pandemic. In the COVID-19 report of WHO on People's Republic of China, the death rate has been reported as 3,8%. The death rate in our country is 2,6% as of 2 May 2020.

Asymptomatic Infection: Within the literature, there have been cases of quantitative RT-PCR (nasopharyngeal swab samples) have been reported as positives in people who show no symptoms. Most of the asymptomatic cases manifest symptoms in the following

stages of the infections but there are phenomenons that were asymptomatic throughout the clinical follow-up period.

2.4. Laboratory Tests Respiratory track samples taken from patients with possible COVID-19 diagnosis are checked at Microbiological Laboratories authorized by the Ministry of Health, Microbiological Reference Laboratories of General Directorate of Public Health and laboratories serve in determined provinces

2.4.1. Nucleic Acid Amplification Tests (NAAT) Routine verification of COVID-19 phenomenon is conducted with a NAAT test such as real-time reverse transcription polymerase chain reaction (rRT-PCR) and by determining the unique sequence of virus RNA and verification with nucleic acid sequence analysis when it is deemed necessary. The possibility of COVID-19 cannot be excluded with one or more negative results. The factors below might cause negative results in an infected person:

- Inferior sample where patient material is too little
- Taking the sample at a too early or too late stage of the infection,
- Not processing and shipping the sample in an appropriate manner,
- Technical issues that are natural to test such as PCR inhibition or virus mutation
- Undulant dispersion of SARS-CoV-2 virus with symptomatic and asymptomatic cases.

In case of a negative result of a patient who carries a high COVID-19 positive possibility, specifically when samples are collected from only the upper part of the respiratory tract, additional samples should be collected from the lower respiratory tract if possible and they should also be processed.

2.4.2. Sequencing

2.4.3. Serological Tests Those who are contracted with COVID-19 either symptomatically or asymptotically develop antibody response (IgM, IgA and IgG) after a certain time. So, serological tests cannot be used as a method of diagnosis. While first antibody response (IgM) generally starts in 6-7 days, most patients generally develop an antibody response in 10 days after the first positive antibodies occur. Whether the antibodies provide an immunity and how long they can be determined (IgG) is not certain today. In order to determine the serological response, IgM/IgC levels can be checked at Microbiological Laboratories authorized by the Ministry of Health, Microbiological Reference Laboratories of General Directorate of Public Health and laboratories serve in determined provinces, using methods such as ELISA, CLIA and IFA.

2.4.4. Quick antigene tests yield results in a short time, determine the virus antigenes and used for screening purposes, as well as can be tracked with various algoritms in symptomatic or asymptomatic people. The reference for diagnosis is RT-PCR.

3. DIAGNOSIS

A diagnosis is made if there are symptoms of fever, coughing, shortness of breath, sore throat or a running nose, or symptoms such as headache, muscle pain, loss of taste and smell or diarrhea, and a definitive diagnosis is made if there is RT-PCR positive result.

4. RISK GROUPS

Who are Faced with a More Severe Risk?

The information on COVID-19 so far shows that some people have the risk of developing more severe symptoms and contracting the disease in general.

- 80% of the cases show only mild symptoms.
- 20% of the cases are treated in hospital.
- Generally, the disease affects people over 60 years of age much more severely.

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- People over 60 years of age
- People with serious chronic medical diseases:
 - Heart diseases
 - High Blood Pressure
 - Diabetes
 - Chronic Respiratory Tract Diseases
 - Cancer
- Healthcare Personnel

5. WHAT ARE THE METHODS OF PROTECTION?

The fundamental principles recommended for decreasing the general infection risk of acute respiratory tract infections are applicable for the Novel Coronavirus disease (COVID-19). These are;

- Hand sanitation should always be observed. Hands should be washed for 20 seconds at least with soap and water, alcohol based hand sanitizers that should be used when soap and water are inaccessible. Antiseptic or antibacterial soaps are not needed, regular soap is enough.
- Mouth, nose and eyes should not be touched without washing hands.
- Contact with ill people should be avoided (at least 1 meter of physical distance should be maintained if possible).
- Hands should be cleaned regularly after direct contact with ill people or their environment.
- Healthcare institutions should be avoided as much as possible due to a concentration of patients and in case it is mandatory, contact with patients should be minimized.

- Nose and mouth should be covered with a tissue when coughing and sneezing, and the inner part of the elbow should be used when tissues are unavailable. Crowded places should be avoided as much as possible and if it is mandatory, mouth and nose should be covered and surgical masks have to be used.
 - Raw and undercooked animal products should be avoided and well-done food materials should be preferred.
 - High-risk areas of general infections such as farms, livestock markets and areas where animals can be slaughtered should be avoided.
 - In case of a respiratory tract symptom following the 14 days after travelling, the person should apply to a healthcare institution wearing a mask and the physician should be informed about the travel history.
 - If there are Covid-19 symptoms, the person should not come to the campus and the department executives should be informed.
 - In case of a contact with an ill person (at home, in a friend group or at the hospital) the person should notify the department executive immediately.
 - Students / staff that are in the risk group should apply to the campus health center, register and be evaluated for pneumonia and influenza vaccines.
- Infection Control Precautions for Students In Applied Courses in Health Programs;



14 RULES

AGAINST THE RISK OF NOVEL CORONAVIRUS

- 1** | Wash your hands frequently with soap and water for at least 20 seconds.
- 2** | Keep a physical distance of 3-4 steps between yourself and people showing cold symptoms.
- 3** | Keep the places you are in well-aired
- 4** | Wash your clothes with a regular detergent at 60-90 Degrees Celsius.
- 5** | If you have a fever that do not go down or symptoms like coughing or shortness of breath, use a mask and apply to a healthcare institution.
- 6** | Do not touch your eyes, mouth or nose.
- 7** | Stay at home for 14 days when you return from another country.
- 8** | Cover your mouth and nose with a tissue when you sneeze and cough. If a tissue is not accessible, use the inner part of your elbow.
- 9** | Cancel or postpone your international travel plans.
- 10** | Clean door handles, armatures, sinks and such frequently used surfaces with water and cleaning agents.
- 11** | Avoid close contact like shaking hands or hugging.
- 12** | If you have cold symptoms, do not have contact with the elderly and people with chronic diseases. Do not leave your home without a mask.
- 13** | Do not share your personal belongings, eg. Towels.
- 14** | Stay well hydrated, follow a balanced diet and avoid disrupting your sleep schedule.

Infection Control Precautions for Students in Applied Courses of Healthcare Programs;

- 1-** Avoiding services and units with definitively diagnosed COVID-19 patients as much as possible if they are not registered to internships that are directly relevant,
- 2-** Maintaining smaller groups in education,
- 3-** Maintaining infection control precautions in case contact with a patient is necessary;
 - a) Masks should be used throughout the hospital and worn correctly
 - b) Masks should only be removed while eating and no contact closer than 2 meters face to face should be made,
 - c) Nose, mouth and eyes should never be touched,
 - d) It should be remembered that there is a possibility of contamination when touching a surface that is used commonly and hands should be washed frequently. If there is no access to water, hand sanitizers should be used,
 - e) Crowds should be avoided as much as possible and a physical distance of 2 meters should be maintained
 - f) If there are COVID-19 symptoms, the hospital should be avoided and internship executive should be notified.
 - g) Anyone who contacted with a COVID-19 positive person (at home, among friends or at the hospital) should also notify the internship executive.

Infection Control Precautions for All Students;

- 1-** Masks should be worn in an appropriate way at and outside of campus
- 2-** Masks should only be removed while eating and no contact closer than 2 meters face to face should be made
- 3-** Nose, mouth and eyes should never be touched
- 4-** It should be remembered that there is a possibility of contamination when touching a surface that is used commonly and hands should be washed frequently. If there is no access to water, hand sanitizers should be used
- 5-** Crowds should be avoided as much as possible and a physical distance of 2 meters should be maintained
- 6-** If there are COVID-19 symptoms, the campus should be avoided and the health center should be notified. If the student lives at the hall of residence, the student should be taken to the isolation area.
- 7-** Anyone who contacted with a COVID-19 positive person should also notify the health center .

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