THE REPUBLIC OF TURKEY
MINISTRY OF HEALTH

GENERAL DIRECTORATE OF PUBLIC HEALTH

GUIDANCE TO COVID-19 (SARS CoV2 INFECTION)

(Scientific Board Study)

REPUBLIC OF TURKEY MINISTRY OF HEALTH

April 14, 2020

SUMMARY OF RECENT UPDATES:

- Sampling
- Contact tracing
- Patient transfer with ambulances
- Patient follow-up at houses
- Adult patient management at the designated COVID-19 polyclinic
- Treatment of adult COVID-19 patients
- Support therapy for COVID-19 patients
- Treatment and management of children with COVID-19
- Assessment of contacted healthcare professionals
- Morgue and burial services

INTRODUCTION

Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV).

Coronaviruses are zoonotic, meaning that they are transmitted between animals and people.
Detailed investigations found that SARS-CoV was transmitted from civet cats to humans while MERS-CoV from dromedary camels to humans. Several known coronaviruses are circulating in animals that have not yet infected humans.

The common strains of coronaviruses (HCoV-229E, HCoV-OC43, HCoV-NL63 and HKU1-CoV) are mostly those known to cause the common cold. SARS-CoV was discovered in 2003 as the first international health emergency of 21st century in the form of a previously-unknown virus and caused hundreds of casualties. After nearly a decade from its outbreak, MERS-CoV (Middle East Respiratory Syndrome Coronavirus) of Coronavirus family was first identified in human in Saudi Arabia in September 2012, which has not presented itself in human or in animals before, however later it was found that the first known cases had been detected in a hospital in Zarqa, Jordan in April 2012. Despite its distant connection with SARS Coronavirus, it managed to raise concerns due to previous SARS experiences.

On December 31, 2019, the WHO China Country Office reported cases of pneumonia unknown etiology detected in Wuhan City, Hubei Province of China. On January 7, 2020 the agent was identified as a new type of *coronavirus* (2019-nCoV) which has not been previously detected in human. Later, 2019-nCoV disease adopted the name 'COVID-19' and then now named after SARS-CoV-2 due to its similarity to SARS CoV.

This guidance has been issued to inform about COVID-19 and its agent, modes of transmission, definition of cases and diagnostic procedures and to guide about the strategies and modes of administration to be followed in case of encountering a COVID-19 case or contact. This document has been created mainly based on WHO suggestions. "The Guidance to COVID-19 (2019nCoV Disease), addressing COVID-19, is hereby updated in line with up-to-date WHO suggestions and scientific developments. Updated guidelines and guidance presentations, banners, brochures and frequently asked questions and answers are published on the website of the Directorate General for Public Health (www.hsgm.saglik.gov.tr) on regular basis.

I. OVERVIEW 1. Coronaviruses

Coronaviruses are single-stranded, enveloped positive-sense RNA viruses. Since they are positivesense, they do not contain RNA-dependent RNA polymerase enzymes yet encode this enzyme in their genomes. The name *Coronavirus* (crown virus) is derived from the Latin corona, meaning "crown" which refers to the club-like spikes that project from their surface (Figures 1 and
2).

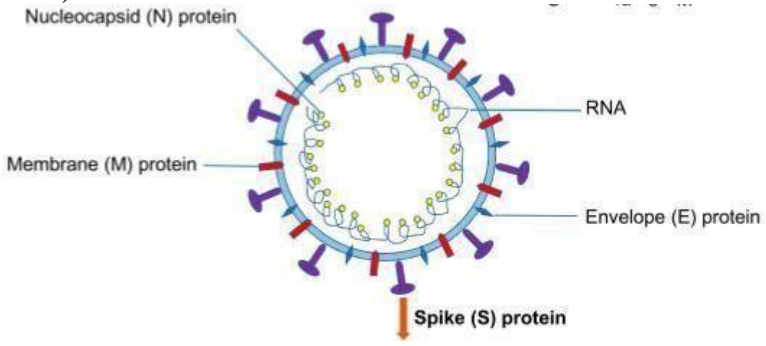


Figure 1. Schematic structure of Coronavirus (*Zhou Y, Yang Y, Huang J, Jiang S, Du L. Advances in MERSCoV Vaccines and Therapeutics Based on the Receptor-Binding Domain. Viruses. 2019 Jan 14;11(1)).*

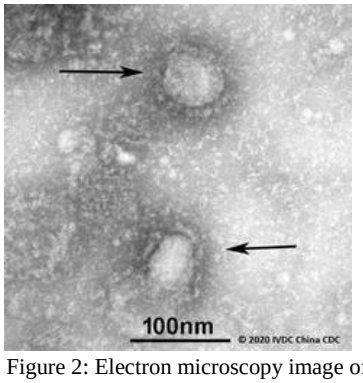


Figure 2: Electron microscopy image of the new coronavirus (beta coronavirus) (*https://www.gisaid.org/, last*

accessed: 20.01.2020)

Coronaviruses are members of the family *Coronaviridae* and of the subfamily *Orthocoronavirinae*. *Orthocoronavirinae* subfamily is classified into four genera, and numerous subspecies, namely: *Alpha, Beta, Gamma* and *Delta Coronaviruses*. Subspecies under such genera are human, bats, pigs, cats, dogs, rodents and poultry (pets and wild animals).

The broad spectrum of diseases caused by the *Coronavirus* in human varies from the common cold to Severe Acute Respiratory Syndrome (SARS) and leads to clinical pictures accompanied by various severities of respiratory, enteric, hepatic, nephrotic and neurologic involvements, both in human and animals.

The first complete genome of the new strain *Coronaviruses* (COVID-19) was found in bronchoalveolar lavage fluid samples using the combination of Sanger, Illumina and Nanopore sequencings, resulting in three different strains. This virus carries the typical characteristics of the *Coronavirus* family and is identified as a new strain of Beta coronavirus from group 2B. These strains and Beta coronavirus genomes were shown to be affiliated with bat-derived SARS-like coronavirus isolate Bat-SL-CoVZC45 (Figure 3).

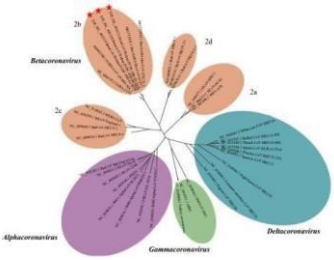


Figure 3: Phylogenetic Relation of the New Coronavirus (*Tan W, Zhao W, Ma X, et al. A Novel Coronavirus Genome Identified in a Cluster of Pneumonia Cases — Wuhan, China 2019−2020, Notes from the Field, China CDC Weekly*)

COVID-19 virus is a member of *Betacoronavirus* family which also contains SARS-CoV and MERSCoV under the subspecies of *Sarbecovirus*. Virus is now named as SARS-CoV-2.

2. Epidemiology

On 31 December 2019, health authorities in Wuhan, Hubei Province, People's Republic of China, reported pneumonia cases of unknown etiology. The first cluster was detected in employees of the Huanan Seafood Wholesale Market, in the south of Wuhan (a wholesale market selling different kinds of live fish and animals). Cases have shown findings concordant with fever, dyspnea and radiologically bilateral lung infiltrates. WHO's report on COVID-19 for the Republic of China highlights that mostly elderly patients or patients with comorbid systemic diseases (hypertension, diabetes, cardiovascular diseases, cancer, chronic lung diseases and other immunosuppressive cases) have been reported in fatalities reported so far.

The first imported case of coronavirus was confirmed in a 61-year old Chinese woman by Thailand on January 13, 2020. Not only the number of imported case reporting countries increased in the following days, locally-infected countries also emerged by the end of February. While the rate of the outbreak slowed down in China by early March 2020, the number of COVID-19 cases and the rate of fatalities related thereto have spiked up in Iran, the Republic of Korea (South Korea) and Italy. More than 100 cases have been reported throughout the world by early March 2020. You can find updated information on the World Health Organization (WHO) website on https://www.who.int/emergencies/diseases/novel-coronavirus-2019 and on the website of the Directorate General of Health Services for Borders and Costs of Turkey at https://www.seyahatsagligi.gov.tr/Site/koronavirus .

The cause of pneumonia cluster that was detected in December 31, 2019 was defined as novel coronavirus on January 7, 2020 that has not been previously detected in humans. The number of cases has increased as of that date and healthcare providers have also reported to be affected by the disease.
This suggests that the disease can speedily spread since it can pass from person to person.

3. Source and Transmission of COVID-19 Infection

Source:
The source of the infection is not yet clear.
The origin source of SARS-CoV-2's is still being researched. Nevertheless, current data points to the wild animals sold illegally at the Huanan Seafood Market.

Transmission
The virus is primarily considered to pass from one person to others via droplets produced from the airways, often during coughing or sneezing and through contaminated surfaces i.e. contact with eye, mouth, nose, mucus.
Asymptomatic people may carry the virus in their respiratory tracts yet primarily transmission is through infected patients.

According to epidemiologic information about cases in China, incubation period is 5-6 days (2-14 days) and may extend to 14 days in certain cases.

The infection period of COVID-19 is not yet clear. It is considered to start 1-2 days prior to symptomatic period and end as symptoms vanish.

Coronaviruses, in general, do not have environmental resistance. The resistance time of the virus depends on the humidity and temperate of the environment, amount of organic substances excreted, the texture of the contaminated surface and similar factors. Nevertheless, it is considered that it generally loses its activity on inorganic surfaces within a few hours. Not only the persistence of virus activity on infection but also the duration of contact should be taken into consideration for the interpretation of activity period on inorganic surfaces.

Coronaviruses, in general, do not have environmental resistance. However, it is still unknown the duration of infectiveness and environmental resistance of COVID-19.

4. Clinical Features

Common symptoms of infection may include breathing difficulties, fever, cough and dyspnea.
Pneumonia, acute respiratory infection, renal failure and even death may occur in more severe cases.

While the rate of fatality was 11% in SARS and between 35-50% in MERS-CoV, WHO China Report on COVID-19 suggest that the rate of fatality is 3,8%. Although first impressions suggest that the disease could be of mild form due to the availability of asymptomatic cases, cases should be collectively followed up.

5. Laboratory Tests

Samples of respiratory tracts of the patients that fit to the probable case definition of COVID-19 are evaluated at Microbiology Reference Laboratories of the General Directorate for Public Health (GDPH) and at Public Health Laboratories in designated provinces according to SARS-CoV-2 (https://covid19.saglik.gov.tr/tr/laboratuvar-listesi the list of laboratories)

Since coinfections may occur even other respiratory tract pathogens are detected, all samples of the patients that fall into the description of COVID-19 should also be evaluated for SARS-CoV-2.

Nucleic acid amplification tests (NAAT)

Nucleic acid amplification tests (NAAT) of SARS-CoV-2 virus are based on the detection of original sequences of the virus with a NAAT test, such as routine verification of COVID-19 cases with real-time reverse transcription-polymerase chain reaction (rRTPCR), and verification with a method of nucleic acid sequence analysis if necessary. The RNA extraction should be performed in BSL-2 or equivalent biosafety cabin. It is not recommended to heat the samples before the RNA extraction.

It is enough to scan with a simpler algorithm such as scanning with a single definitive targeted rRT-PCR in places where SARS-CoV-2 virus is encountered frequently, even though there are different protocols targeting N, E and S genes for molecular tests. The COVID-19 virus infection cannot be disregarded with one or two negative test results. The following reasons may be the reasons for negative test results of the infected individual:

- Poor quality sample with insufficient patient material,
- Sampling at a very early or late phase of the infection,
- Unsuitable processing and transfer of the sample,
- Technical reasons such as PCR inhibition or virus mutation due to the nature of the test.

If the test results of a highly suspected COVID-19 patient is negative, if possible, lower respiratory tract samples should also be studied especially if only upper respiratory tract samples are collected.

Sequencing

Sequence data is quite significant to understand the source of virus and how it spreads. WHO reported that the laboratories have to share any sequence data obtained on relevant platforms (GenBank, GISAID etc.)

Serological tests

The study of serological tests in serum samples taken in the acute and/or convalescent phase may support the diagnosis in cases where NAAT tests are negative and there is a strong epidemiological link with COVID-19 infection. Serological tests such as rapid antibody tests detecting ELISA or IgM/IgG are used for this purpose. In addition, serological tests help the research on the ongoing outbreak, and enable a retrospective assessment of the attack rate and outbreak severity.

II. DEFINITION OF CASE AND CASE MANAGEMENT

Probable Case:

A:

- At least one symptom and finding of fever and acute respiratory tract disease (cough and respiratory distress) AND
- Clinical picture unexplained with another etiology AND
- Travel history 14 days before the onset of symptoms of the patient or a close contact

OR

B:

- At least one symptom and finding of acute respiratory tract disease (cough and respiratory distress) AND
- Contact with a confirmed COVID-19 case within 14 days before the onset of symptoms

OR

C:

- At least one symptom and finding of fever and severe acute respiratory tract disease (cough and respiratory distress) **AND**
- The necessity of hospitalization (SARI)* **AND**
- Clinical picture unexplained with another reason/disease

** SARI ❼ the necessity of hospitalization of a patient with acute respiratory infection developed within the last 14 days, due to fever, cough and dyspnea, tachypnea, hypoxemia, hypotension and common radiological findings in chest radiography and changes in consciousness*

OR

D: Sudden onset of fever with cough and respiratory distress without a runny nose.

Confirmed Case: any case of infection with SARS-CoV-2 virus through molecular techniques from the cases that fit to the definition of probable case.

Probable/Confirmed COVID-19 cases are managed according to the Case Follow-up Algorithm.

Detection of seasonal respiratory tract virus or bacteriological agents in the samples of probable case patients do not rule out the existence of SARS-CoV-2 virus.

CASE FOLLOW-UP ALGORITHM

PROBABLE CASE

Once the case is defined, the Infectious Diseases Department of the Provincial Health Directorate is duly notified. The case is managed in coordination with the Provincial Health Directorate.

HEALTH INSTITUTION

- Personnel to record cases to the Public Health Management System (HSYS) and follow-up daily should be designated at each inpatient treatment institution.
- All the cases complying with the COVID-19 probable case definition are be recorded into epulse application within the Communicable Diseases Notification System through Hospital Information Management System (HBYS) with the U07.3 ICD 10 case code.
- All the cases, including probable cases, are recorded within the HSYS.
- COVID-19 test is requested through the HSYS by taking appropriate samples* from the cases. • Probable/confirmed cases are accepted and treated at the Pandemic Hospitals (Hospitals of Ministry of Health, Public and Foundation University Hospitals, and private hospitals) in isolation.
- The treatment and follow-up are either done at the Pandemic Hospitals or at home according to the decision of the physician.
- It is essential that the probable and confirmed cases to be followed at the designated hospitals, units and ICU according to the Pandemic Plans prepared at the provincial and hospital levels. It should be ensured that patients are monitored in these units as isolated, if not at least 1 to 1.5 meters apart.
- The hospitals that have a 2nd level adult ICU serve as a pandemic hospital if pandemic hospitals are inadequate.

PROVINCIAL HEALTH DIRECTORATE The provincial health directorate:

- Enables the samples taken from inpatient health institutions to be quickly and appropriately sent to the related laboratories.
- Enables the research of the epidemiological link between the cases if there is a suspicion of case clustering.
- Ensures that the contacts of all the cases recorded within HSYS are traced, contacts are listed and recorded within HSYS.
- Follows the daily tracking status of the inpatient cases who are recorded within HSYS.
- Enables the people coming from abroad, people who have contacted a probable case and the individuals who are confirmed cases and decided to be monitored at their houses are monitored by the Family Medicine Service.
- Coordinates the contact tracing and positive case tracking to be done by field teams and monitors daily.
- Coordinates the monitoring of people coming from abroad who have been decided to be monitored collectively and follows the daily monitoring.

LABORATORIES

Samples forwarded by PHD are analyzed and results are recorded within LBYS. (The results in LBYS are communicated automatically to HSYS once they are approved. The test results are shown on a case-by-case basis to the institution and the users within HSYS, limited with their authorization.

* Respiratory sample swabs are collected through Viral Transport Medium (VTM). Tracheal aspirates, bronchoscopic specimens, sputum must be taken into sterile, screw-capped containers of 2-3 ml. After collected, all samples must be stored in freezers (between 2-8°C) and must be urgently transported to the laboratory.

COVID-19 Case Management in Planes

International flights have stopped completely. A limited domestic flight plan is in place.

General Directorate of Health for Borders and Coasts of Turkey informs all the passengers flying into Turkey about how to get help from the health institutions within the country in case they develop symptoms.

Individuals detected within the plane or at the airport and who fit to the probable case definition are managed according to the following algorithm.

PATIENT WITH SYMPTOM

If detected on airplane

- Pilot reports the case to the tower.
- Tower reports the case to airport health supervision center/airport operation center.
- All patients fill in passenger contact forms.
- Information about the patients on two front, two back and two side seats are obtained.
- Health Supervision Center assesses the case on board.
- Health Supervision Center informs the Provincial Health Directorate and 112 Command Center.
- Procedures for infectious diseases as suggested by National/International Civil Aviation authorities and organizations are applied.
- Health Supervision Center, after assessing the case, delivers the case to 112 with probable case form.
- Case is transferred to hospitals with multidisciplinary requirements through 112.
- Patient is here managed according to Probable Case Follow Up Algorithm.

PATIENT WITH SYMPTOM

If detected at the airport

International arrivals terminal should be equipped with thermal camera systems at the earliest points (thermal cameras should be used by at least two trained personnel wearing medical masks, non-sterile gloves and eyewear).

a) Any individual detected by thermal camera for fever, or

b) Any individual showing symptoms of fever and/or respiratory tract symptoms at the airport are equipped with medical masks.

1) In cases defined as probable case;

- Person is dispatched to health supervision center.
- Person is evaluated by Health Supervision Center personnel.
- Any individual, defined as probable case, are transferred to relevant hospital through 112 Emergency Health Services with "Probable Case Information Form" after reporting to Provincial Health Directorate and 112 command centers.
- Such individual is transferred to suitably equipped hospitals with multidisciplinary conditions via 112.
- Airline of such individual is contacted to obtain information about two front, two back and two side seats of such individual and reported to Provincial Health Directorate to follow-up contacts.
- Case is managed according to Case Follow-up Algorithm.
- Sample result is notified to the Health Supervision Center by the Infectious Diseases Department of Provincial Health Directorate.
- Information about probable case is notified to Provincial Health Directorate on daily basis.

2) In cases not defined as probable case;

- If passenger is a transit passenger, they are informed accordingly to permit flight.
- Passengers other than transit are recorded and generally informed and allowed into the country.

COLLECTION, STORAGE AND TRANSFER OF SAMPLES

Sampling

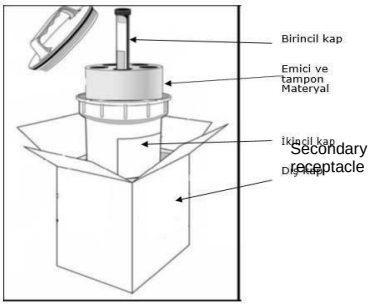
Tracheal aspirate or bronchoscopy specimens should be preferred for sampling in lower respiratory specimen. Where it is not possible or in cases with no lower respiratory symptoms, nasopharyngeal lavage or nasopharyngeal and oropharyngeal swabs should be sent together. Ideally, first oropharyngeal swabs should be taken and then the same swap should be used to sample from the nose and to place in the same medium. Oropharyngeal and nasal swab samples taken from the same patient should **not** be sent to separate mediums.

The authorized health personnel should take respiratory samples from the probable or confirmed COVID-19 cases. The personnel experienced on infection prevention and control (Infectious Diseases Physician or Infection Control Nurses) should give trainings on infection control precautions, using personal protective equipment and appropriate sampling to the designated personnel, and such personnel should be authorized only after receiving the training.

A single negative test result, particularly if this is from an upper respiratory tract specimen, collected **from individuals with progressive findings of infection** does not exclude the suspicion of COVID-19 infection.

Safety procedures during sample collection and transport

- All specimens collected should be regarded as potentially infectious and sampling should be regarded as droplet/aerosol-generating procedure and related individuals must use personal protective equipment (at least N95 or FFP2 masks, goggles or face protectors) accordingly.
- Healthcare workers, who collect and transport samples, should adhere rigorously to infection prevention and control guidelines and send the samples according to cold chain rules with triple transport system.
- Samples should be correctly labelled, and diagnostic request forms should be filled out properly and clinical information should be provided.
- Good communication with the laboratory should be established and needed information should be provided, when necessary.
- The laboratory should be informed before sending any samples.
- Waste samples should be subject to the requirements on the disposal of medical wastes.



Primary receptacle

Secondary receptacle

Absorbent and bumper material

Outer receptacle

Triple receptacle

Information to be recorded:

- Patient information – name, date of birth, sex and residential address, unique identification number, other useful information **and name of risky zone that has been visited** and other necessary information (e.g. hospital number, name of hospital, hospital address, physician's name and contact information)
- Date and time of sample collection
- Anatomical site and location of specimen collection
- Tests requested
- Clinical symptoms and relevant patient history (including epidemiological information, risk factors, vaccination and antimicrobial therapies)

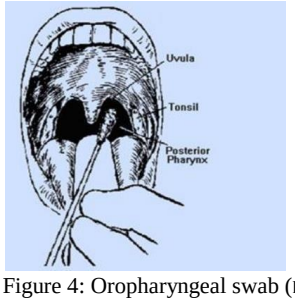


Figure 4: Oropharyngeal swab (https://hsgm.saglik.gov.tr/depo/kurumsal/plan-ve-faaliyetler/numune-alma-el- kitabi.pdf)

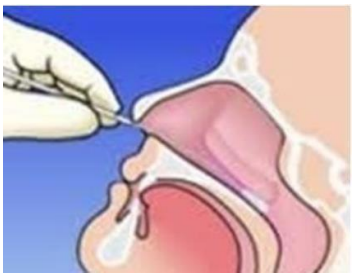


Figure 5: Nasopharyngeal swab (https://hsgm.saglik.gov.tr/depo/kurumsal/plan-ve-faaliyetler/numune-alma-el- kitabi.pdf)

CONTACT FOLLOW-UP EXCLUDING HEALTHCARE PROFESSIONALS

Persons, who have been exposed to individuals with suspected COVID-19 infection without taking any protective measures against droplet infection, should be followed up for 14 days following their latest unprotected contact, particularly for fever and respiratory symptoms and should be called on daily basis, and if necessary, should be visited at home. The Provincial/District Healthcare Department organizes and carries out the contact follow-up.

Contacted healthcare professional is managed according to the "Assessment of the Contacted Healthcare Professionals" algorithm.

The following should be performed for the contacts in case of any probable COVID-19 findings. If an individual is detected to have a probable COVID-19 infection:

1. The persons who have contacted with such individual and the properties of such contact (whether considered as a close contact criterion or not) and their contact information are recorded.
2. If the PCR results of the probable case is negative:
   a. No measures are taken against the contacts.
   b. The close contacts are informed to work by wearing a mask and following themselves for fever and respiratory symptoms for 14 days.
3. No measures are necessary against the close contacts if the test result is negative.
4. If test result is positive;
   a. The close contacts should be followed up at home for 14 days against fever and/or respiratory symptoms. The persons should be informed written and verbally about their follow up at home and their consents should be taken. In cases necessary, the health directorate may actively (by telephone or visit) follow up the case.
   b. The contacts should be informed to follow up their fever and respiratory symptoms for 14 days while working by wearing a mask.
   c. The contacts or close contacts should apply to a healthcare institution, by wearing a mask, if they develop any fever and/or respiratory symptoms (cough, respiratory distress) within the 14 days of follow up. The cases who applied to the healthcare institution is managed according to probable case algorithm.

Close Contact

- A person providing direct care to a confirmed or probable case without taking droplet precautions, a person working with COVID-19 infected healthcare professionals, or a person with a healthcare institution related exposure due to a visit to a COVID_19 infected patient;
- Students and teachers who share the same classroom in pre-school or school with a COVID-19 patient;
- Individuals who share the same room in a dorm or a hotel with a COVID-19 patient;
- Individuals who have a direct contact (i.e. shaking hands) with a COVID-19 patient;
- Individuals who have unprotected contact with the excretions (saliva, phlegm) of a COVID-19 patient;
- Individuals who have been face to face for longer than 15 minutes at a distance less than 1 meter with COVID-19 patient;
- Individuals who have been in the same indoors environments (hospital or bank waiting rooms, bus, service etc. transports) for at least 15 minutes or more at a distances less than 1 meter with COVID-19 patient;
- Individuals on two front, two back and two side seats of the patient who has travelled on the same aircraft with COVID-19 patient;
- Individuals who live in the same household with a patient with COVID-19; and • Individuals who work in the same office with a patient with COVID-19.

Contacts:

- Individuals who have been in the same indoors environment (hospital or bank waiting rooms, bus, service etc. transports) at a distance more than 1 meter with COVID-19 patient;
- Individuals who have been in the same indoors environment (hospital or bank waiting rooms, bus, service etc. transports) for less than 15 minutes with a COVID19 patient;
- Individuals who have spent less than 15 minutes at a distance closer than 1 meter face to face with a COVID-19 patient in the same indoors environment;

- Individuals who have been in the same indoors environment for more than 15 minutes a COVID-19 patient by wearing a mask.

Airplane Contacts

- Individuals on two front, two back and two side seats of the patient who has travelled on the same aircraft with confirmed or probable COVID-19 case should be monitored for two weeks after contact.

The contacts should be monitored according to the contact monitoring.

CONTACT ALGORITHM

- Any person defined as close contact/airplane contact are determined by the Provincial Health Directorate. • Any such determined people are listed and monitored by call for the next 14 days after their latest contact.
- Contacts should be monitored, particularly, for fever and respiratory symptoms however, other symptoms including shivering, body aches, sore throat, headache, diarrhea, nausea/vomiting and nasal flow should be taken into consideration, monitored by call on daily basis and home visit should be organized if necessary.
- "Contact follow-up form" on official website of DGPH should be filled out for each contact of the case to monitor the contacts.
- The contacts are informed to monitor themselves for 14 days for fever and respiratory symptoms and to continue working with wearing a mask.
- If it is not necessary to hospitalize such determined contacts due to other reasons, they should stay at home as much as possible for 14 days and keep away from public spaces. If it is necessary to go to public spaces, then they should wear medical masks.
- In case of any symptoms, actions should be taken according to the Probable Case Algorithm.
- The contact is managed according to the "Assessment of the Contacted Healthcare Professionals" algorithm if the contact is a healthcare professional.

III. INFECTION CONTROL AND ISOLATION

Patients should be isolated while they are in a healthcare institution since the virus withdrawal and infection period is still unknown.

COVID-19 is of zoonotic origin and latest data manifest human to human transmission. Therefore, **standard and droplet isolation measures should be taken against COVID-19 suspected cases.**

Hospitalization:

- Probable case is followed up at secondary and tertiary hospitals.
- Confirmed cases are followed up at secondary and tertiary hospitals or at hospitals in designated provinces.
- Confirmed cases who need intensive care are followed up at isolation chambers in 2nd or 3rd degree intensive care units.

Healthcare institutions should implement standard infection prevention and control methods. In addition, contact and droplet protection methods should be implemented until patient becomes asymptomatic.

The following infection prevention and control measures should be taken to prevent spread/transmission of disease.

Personal protective equipment for the healthcare workers to be at most 1meter close contact with COVID-19 cases

1. Gloves,
2. Gown (non-sterile, preferably fluid resistant and long-sleeved),
3. Medical mask (surgical mask),
4. N95/FFP2 or N99/FFP3 mask (only during the process that causes droplet/aerosolization)*,
5. Face shield
6. Goggles**,
7. Liquid soap,
8. Alcohol based antiseptics,

Should be kept readily available in sufficient number by the inpatient health institutions.

Medical coveralls, foot protectors may also be used in case of intense contact with body fluids and secretions of the patients on patient basis.

Recommendations of using Personal Protective Equipment
https://hsgm.saglik.gov.tr/depo/covid19/rehberler/COVID_TABLE_HSGM.pdf?type=file

** The process that causes droplet/aerosolization, aspiration, bronchoscopy and bronchoscopic procedures, intubation respiratory tract sampling*

*** Reusable goggles are cleaned as per manufacturer's suggestions. If no special recommendation is made, they are disinfected with 70% ethyl alcohol and allowed for drying in suitable environment. If goggle is to be reused, health institution instructs about where to take off, store and disinfect goggles.*

Properties of Patient Room

1. Standard contact and droplet measures should be taken for hospitalization of probable or confirmed COVID-19 cases.
2. Patients should stay in single rooms with a private bathroom and restroom that can be locked inside.
3. In case of unavailability of single rooms, confirmed COVID-19 cases may be cohort in the same room yet probable COVID-19 cases should preferably not stay in the same room. In cases where necessary, probable COVID-19 cases should be kept at 1-meter distance at least in the same room. Probable cases included in cohort should wear medical masks.
4. Medical materials to be used should be specific to patient and should not be taken outside the room. Patients must not share any common materials. If any equipment is to be used for multiple patients (e.g. stethoscopes, thermometers), they should be cleaned and disinfected after each use (e.g. ethyl alcohol, 70%).
5. Unless medically required, patient should be avoided from transferring from one room to another. Portable X-ray device and/or other important diagnostic devices designated to probable COVID-19 should be used. However, if no mobile diagnostic device is available, patient should be treated as latest case, if possible, to minimize contact with other patients and visitors after taking contact and droplet isolation measure, with medical masks.
6. Healthcare workers should wear medical masks, gowns and gloves during the transfer of patient and should take care about hand hygiene. If there is any aerosol-generating case as per general condition of patient, N95/FFP2 mask and goggle should be kept available.
7. The environment of patient should be cleaned and disinfected according to the rules specified in accordance with the directives of infection control committees at the hospitals.

8. Two separate medical waste units should be kept available at the entrance of and within the patient room for disposal of used personal protective equipment.

Entering the Patient Room and Bedside Manners

1. Entries into the patient room should be restricted with the healthcare workers, who are responsible from caring for the patient and need to enter. Patient visitors should be prohibited and attendants, if necessary, should be restricted with a single person.

2. Personal protective equipment (gloves, gown (non-sterile, preferable fluid resistant and long-sleeved), medical mask, N95/FFP2 mask, face shield, goggles, alcohol-based hand antiseptics) should be kept available at the entrance of patient room.
3. Healthcare workers, who are responsible form examining, treating and personal care of patients, should wear gloves, gowns and medical masks. Health care workers should make sure to wear N95/FFP2 mask and face shield in case of intervention that may cause aerosolization of patient secretions or excreta*.
4. Healthcare workers should make sure to wear personal protective equipment (gown, mask, goggles, face shield and gloves) and take off (gloves, goggles, face shield, gown, mask) in the right order. In particular, the mask should be taken off the very last after leaving the patient room and then hand hygiene must be performed.
5. In case of potentially contaminated or disintegrated gloves, gloves should be taken off, hand hygiene should be performed, and new gloves should be worn.
6. During aerosol-generating procedures, no individuals except for necessary healthcare workers should be allowed into the patient room. Door should be kept closed during the procedure and should always be kept closed for a while after procedure, including entries and exits. Related procedures should be performed in adequately ventilated rooms, preferably in negative pressure rooms.
7. Hand hygiene should be performed before and after contact with the patient. Soap and water or alcohol-based hand antiseptics may be used for such purposes. If hands are visibly dirty, water and soap must be used instead of hand antiseptics.
8. Patient should not be allowed outside the room unless medically required. If it is necessary, patient should be transferred with medical mask.
9. If the patient is undergoing noninvasive or invasive respiratory support, respiratory isolation measures should be taken and N95 mask is recommended instead of surgical mask.
10. The rules specified by the infection control committees should be applied in the environment and ambient cleaning where the patient is present.
11. Surfaces contaminated with patient excreta and secretions should be cleaned in accordance with the "Guidelines for Protection against Infections in Emergency Health Services Before Hospital".
12. The room and levels should be disinfected after patient leaves the rooms. New patients should be allowed into the room only after the room is adequately ventilated.

Patient Transfer with an Ambulance

1. Personal protective equipment should be kept readily available in ambulances.
2. The first-responding team should use personal protective equipment until the patient is delivered to the first responding hospital of the patient and until the ambulance is cleaned.
3. The patient wears a medical mask, and ambulance personnel wears a medical mask and goggles/face protection while transferring outpatients in good general conditions.
4. N95/FFP2 mask, coveralls, and goggles/face shield should be used in case of patients who are coughing uncontrollably or who can need aspiration.
5. Ambulances should be cleaned and disinfected after transfer of probable/confirmed COVID-19 cases. Cleaning should be performed with personal protective equipment.
6. The vehicle should be cleaned and disinfected at the destination spot.
7. Ambulance should be cleaned in accordance with the "Guidelines for Protection Against Infections in Emergency Health Services Before Hospital".
8. Ambulance should not be dispatched to any other case before being cleaned.
9. An assessment with the following question should be carried out before the ambulance is dispatched.
   Triage questions of 112 command control center* 1. Do you have a cough?
   2. Do you experience difficulties in breathing?

   3. Do you have a fever or have a history of fever?

   4. Has any of your close contacts been hospitalized due to a respiratory disease in the last 14 days?

   5. Has any of your close contacts been diagnosed with COVID-19?

   *All these questions are asked, and the individual is regarded as a probable case if one answers yes to at least two of the questions. If the answer to the first two questions is yes, the 112 personnel should use N95/FFP2 mask and goggles/face

protection, medical masks and goggles/face protection are enough in other cases. The adult patients will not have an attendant, the children will have an attendant with a medical mask since it is a legal obligation.

A bacteria/virus filter should be placed, if possible, between the mask and the balloon when the probable/confirmed COVID-19 case needs an intervention. In cases requiring a ventilator, a filter should be placed in the exhalation line if possible, if not, at least a bacteria/virus filter should be placed between the endotracheal tube and the circuit.

Patient Monitoring at Home

The confirmed COVID-19 cases who are below 50, do not need hospitalization, have mild clinical factors and do not have risk factors (hypertension, diabetes, chronic lung disease, chronic heart disease, chronic renal failure or immunodeficiency etc.) and bad prognostic factors (blood lymphocyte count<800/ µl, serum CRP>40 mg/l, ferritin >500ng/ml, D-Dimer >1000 ng/ml) that can cause a severe COVID-19, can be monitored at home by administering the appropriate treatment until the symptoms are recovered. However, if the patient has social indications (house conditions, individuals who has risk factors for a severe COVID19 and/or an individual who is above 65), the case can be monitored at the hospital according to the decision of the physician.

The inpatients who fit to the discharge criteria can complete the recovery period at home.

The patient is discharged by giving the necessary medicine and adequate number of masks. The HSYS user updates the case situation within HSYS as "discharge, follow-up at home".

Azithromycin should not be administered to patients who will be monitored at home due to its possible cardiotoxicity in combination with hydroxychloroquine.

1. Patients monitored at home should be followed up by the family physician. The medical information of the patient should be shared with the family physician, and the health condition is evaluated by asking about the symptoms via phone every other day.
2. After explaining what to do at home during the monitoring period, and the criminal liability, the patient should sign a consent form containing all the information.
3. The patient should stay at home during the monitoring period.
4. House guests should not be allowed.
5. Medical masks should be used whenever the patient must be in the same environment with other people.
6. The monitored patient(s) should be in a separate room, if this is not possible, the room should be well ventilated, the patient should wear a medical mask and be 1 m away from the other people to eliminate the transmission risk. The mask should be renewed if it becomes damp. If it possible, the individuals who carry a risk factor for a severe COVID-19 and/or who are above 65 should not be in the same house or contact risk should be minimized.
7. The patient should have limited movements in the house.
8. The patient should use a separate bathroom, if possible.
9. The bathroom should be well ventilated if it is common. The bathroom should be cleaned with diluted bleach (1:100 with normal dilution) (sodium hypochlorite CAS no: 7681-52-9) at least once a day.
10. The patient and the close contact should be informed about respiratory hygiene (Covering the mouth while sneezing/coughing preferably with a paper tissue, the used tissues should be tossed in closed and non-perforated nylon bags and should be put in a second nylon bag and the nylon bag should be closed, hands should be washed frequently).
11. The patient should not share personal belongings, should not use the same towels, glasses, and plates with the household. If these items must be shared, they should be washed with soap and water. The textile products such as clothes, towels, and linens of the case should be washed with detergent at 60-90 degrees.
12. Gloves and medical masks should be used while cleaning the room of the case. All the surfaces that are contaminated with respiratory secretions or body fluids should be cleaned with bleach in normal dilution (sodium chlorite Cas No: 7681-52-9), in the case of significant contamination 1:10 bleach with normal dilution should be used. (Bleach preparation rates (10%): preparing 1/10 bleach: 1-part bleach + 9 parts water (releases 5000-6000 ppm chlorine), preparing 1/100 bleach: 1-part bleach + 99 parts water (releases 500-600 ppm chlorine). 1 small tea glass of bleach is added to 10 liters of water to have 1/100 bleach.
13. All the household should monitor themselves and contact health authorities immediately.
14. 112 should be called in case of any deterioration in the general conditions of the patient, and health authorities should be informed about the case.
15. Medical masks should be used if the patient needs to be transferred.

Contact Monitoring

Individuals who contacted with a probable/confirmed case (close contact) should be monitored for 14 days.

The healthcare professionals should be monitored according to the "Assessment of the Contacted Healthcare Professionals" algorithm.

Follow up for those who have been in close contact with the cases in verification process for COVID-19 infection should be ended if sample result is negative; and follow-up should continue until day 14 if test result is positive.

1. Patients monitored at home should be followed up by the Provincial Health Directorate by telephone.
2. Patients stay at home during the follow-up period.
3. If the patient shares the same environment (home, hospital etc.) with other individual(s), patient should wear medical mask.
4. Household members should stay in a different room or, if that is not possible, maintain a distance of at least 1 m from the ill person and should wear medical mask and should be replaced if mask becomes damp.
5. No visitors should be allowed into the home.
6. The movements of the patient in the house should be limited and shared spaces such as toilets, bathrooms should be well ventilated.
7. Patient should avoid sharing personal items with others and should not use eating utensils, dishes, towels etc. of household members and if necessary, should wash such items thoroughly with water and soap. Textile products used the patient such as clothes, bedlinen beddings should be washed with common detergent at 60-90°C.
8. Bathrooms and toilets should be cleaned with diluted bleach (1:100 normal dilution) (sodium hypochlorite Cas No: 7681-52-9) at least once a day.

All surfaces that may possibly contaminated with respiratory secretions or body excretions should be cleaned with diluted bleach (1:100 normal dilution) (sodium hypochlorite Cas No: 7681-52-9) and in case of apparent contaminations (1:10 normal dilution) should be used.

Bathrooms and toilets should be cleaned with diluted bleach (1:100 normal dilution) (sodium hypochlorite Cas No: 7681-52-9) at least once a day.

Bleach preparation rates (of 10%):

Preparation of 1/10 bleach: 1-unit bleach + 9-unit water (reveals 5000-6000 ppm chlorine)

Preparation of 1/100 bleach: 1-unit bleach + 99 units water (reveals 500-600 ppm chlorine) A small tea glass of bleach is added into 10 liters of water for 1/100 bleach.

Probable COVID-19 inquiry form for outpatients

A healthcare professional dressed accordingly (medical coverall, medical mask, face protection or goggles) to the COVID-19 case algorithm performs the triage.
Do you have a fever? Yes/No
Do you have a cough? Yes/No
Do you have a respiratory distress, or do you experience difficulty in breathing? Yes/No
If an answer to one of the questions above is YES, the patient is directed to the separated area for COVID19 by putting on a mask.
If the patient answers NO, the following questions should be asked to the patient.
Have you travelled abroad in the last 14 days? Yes/No
Did one of your family members come from abroad in the last 14 days? Yes/No
Have any of your close contacts been hospitalized in the last 14 days due to a respiratory illness? Yes/No
Have any of your close contacts been diagnosed with COVID-19 in the last 14 days? Yes/No
Since the patient is at risk for COVID-19, if an answer to any of the questions above is YES, the patient is directed to the separated area for COVID-19 by putting on a mask.
If the answer to all the questions above is NO, the patient is regarded as at low risk for COVID-19 and directed to the relevant unit to be assessed based on the complaints.

Adult Patient Management at the designated COVID-19 outpatient clinic

The patients who come to the triage – referral area with a mask on are **assessed based on the COVID-19 case definition.**

- The patients who fit to COVID-19 case definition is separated into the diagnosed area.
- People should enter to the area where patients are separated by wearing appropriate PPE (medical coverall, medical mask, goggles/face protection, gloves).
- Anamnesis of the patient is done,
- Examination is done, ○ Vital findings are examined (heart rate, heart rhythm, respiration rate, blood pressure, body temperature and oxygen saturation if applicable),

○ The patient is hospitalized in the relevant unit by providing respiratory and circulation support if the general condition of the patient is unstable,

○ The stable patient is examined.

- Relevant tests are asked from the relevant units.

○ Blood tests: Complete blood count, urea, creatinine, sodium, potassium, chlorine, AST, ALT, total bilirubin, LDH, CPK, D dimer, ferritin, troponin, C-reactive protein values ○ **Imaging:** Chest X-ray is taken and evaluated, and Lung CT with the appropriate method can be performed for the conditions that are set forward below. ○ Clinical decision is made according to the history and examination findings in pregnant patients who cannot have lung CT. ***Lung CT:**

1. Fever+cough – chest X-ray natural: low-dose CT without contrast
2. Fever+cough-chest X-ray is diagnostic/not diagnostic: low-dose CT without contrast
3. Fever+cough+comorbid disease or old age (50 and above) + chest X-ray is not diagnostic: lowdose CT without contrast, if there are indications due to other diseases, contrast CT.

CT should be avoided for women below 20.
The CT should be cleaned appropriately after each patient to avoid cross contamination.

As a result of the assessment above:

A. Management of patients who have an uncomplicated disease setting Patients who:

a. Have symptoms such as fever, muscle/joint pain, cough, sore throat and nasal congestion but who do not have a respiratory distress, tachypnea and SPO2 < 93%,
b. Do not have underlying comorbidities (cardiovascular diseases, DM, HT, cancer, chronic lung diseases and other immunosuppressive conditions) and who are below 50,
c. Do not have bad prognostic factors (blood lymphocyte count <800/µl or CRP>40 mg/l or ferritin >500ng/ml or D-Dimer>1000 ng/ml, etc.) in blood tests of the samples taken at the application,
d. Have a normal chest X-ray and/or lung CT scan are considered as patients with an uncomplicated medical picture and:

- The designated personnel wearing the appropriate PPE (coveralls, N95 mask, goggles/face protection, gloves) to prevent COVID-19 infection during sampling, takes a respiratory sample for PCR test.
- The probable case is sent to the related isolation setting or home by starting the empirical treatment and with the suggestion of isolation out of the hospital (If necessary, the provincial/district health directorate designates the isolation area).

  ○ Hydroxychloroquine sulfate should be preferred in the empirical treatment. ○ Oseltamivir can be added to the treatment for the cases that influenza cannot be ruled out by considering the season and other factors. ○ The hospital pharmacy provides the medicine. ○ Antibiotic treatment is not recommended for the patients who have a mild disease and who do not have a pneumonia finding in the examination and imaging.
- The designated health personnel to monitor outpatients follow up daily on the symptoms and the clinical conditions of these patients. If necessary, or in case of a suspicion, on-site assessment is performed.
- The patient is monitored in a different place than the hospital by being informed about coming to the hospital by wearing a mask if the general conditions and symptoms get worse.

- Out of the patients who have a positive test result:
  - The patients whose symptoms and findings have improved, completes the recommended treatment period, and isolated at home for 14 days following the symptom recovery.
  - The patients whose symptoms and findings continue or get worse are hospitalized to assess the need to be monitored, and the decision whether to continue house monitoring or the need for hospitalization is based on the clinical conditions.
- Out of the patients who have a negative test result:

  ○ The patients whose symptoms and findings have improved should be isolated and monitored at home for 14 days. ○ The patients whose symptoms and findings continue, the ones who developed a fever, have an increased cough or developed a respiratory distress are taken to the hospital by wearing a mask to assess the need for hospitalization, secondary reasons and for sampling.

NOTE: Factors such as the clinical picture of the patient, the need for a support therapy, whether the patient can isolate at home, and whether the patient and the relatives can comply with the rules, and these patients may require monitoring at home should be considered while taking the decision to monitor the patients as outpatients (monitoring at home or related isolation areas).

B. Management of pneumonia/severe pneumonia Patients who have pneumonia findings and who:

a. Have fever, muscle/joint pain, cough, sore throat and nasal congestion, respiratory rate <30/minutes, and whose SPO2 level is above 90% in the air of the room
b. Are below 50 and do not have comorbidities (cardiovascular diseases, DM, HT, cancer, chronic lung diseases and other immunosuppressive conditions),
c. Do not have bad prognostic factors (blood lymphocyte count <800/µl or CRP>40 mg/l or ferritin >500ng/ml or D-Dimer>1000 ng/ml, etc.) in blood tests of the samples taken at the application
d. Have mild pneumonia finding in chest X-ray or lung CT scan are considered as patients with mild pneumonia (who do not have severe pneumonia findings) and

- The designated personnel wearing the appropriate PPE (coveralls, N95 mask, goggles/face protection, gloves) to prevent COVID-19 infection during sampling, takes a respiratory sample for PCR test.
- The probable case is sent to the related isolation setting or home by starting the empirical treatment and with the suggestion of isolation out of the hospital (If necessary, the provincial/district health directorate designates the isolation area).
- The patient is isolated according to the contact and droplet isolation conditions.
    - Hydroxychloroquine sulfate should be preferred for the empirical treatment.
    - Oseltamivir can be added to the treatment for the cases that influenza cannot be ruled out by considering the season and other factors.
    - The hospital pharmacy provides the medicine.
- The designated health personnel to monitor outpatients follow up daily on the symptoms and the clinical conditions of these patients. If necessary, or in case of a suspicion, on-site assessment is performed.
- The patient is monitored in a different place than the hospital by being informed about coming to the hospital by wearing a mask if the general conditions and symptoms get worse.
- Out of the patients who have positive test results:
    - The patients whose symptoms and findings have improved, completes the recommended treatment period, and these patients are isolated at home for 14 days.
    - The patients who still have symptoms and findings or whose clinical conditions got worse are hospitalized to be assessed based on the need for monitoring at the hospital. The decision to continue monitoring at home or to hospitalize is taken based on the clinical conditions.
- Out of the patients who have negative test results:
    - The patients whose symptoms and findings are recovered, are isolated at home for 14 days.
    - The patients who still have symptoms and findings, who developed a fever although not having one before, whose cough is advanced or who develops a difficulty in breathing are taken to the hospital to be assessed for taking another sample, hospitalization and other possible reasons.

NOTE: Factors such as the clinical picture of the patient, the need for a support therapy, whether the patient can isolate at home, and whether the patient and the relatives can comply with the rules, and these patients may require monitoring at home should be considered while taking the decision to monitor the patients as outpatients (monitoring at home or related isolation areas).

B. Patients with severe pneumonia

a. The patients who have fever, muscle/joint pains, cough, sore throat and nasal congestion, tachypnea (≥30/minutes), and whose SPO2 level in the room air is below 90%,
b. The patients who have bad prognostic factors (blood lymphocyte count <800/µl or CRP>40 mg/l or ferritin >500ng/ml or D-Dimer>1000 ng/ml, etc.) in blood tests of the samples taken at the application
c. The patients who have bilateral diffuse pneumonia finding on chest x-ray or CT scan.

An ICU consultation is required to assess the patients based on the following requirements for hospitalization in ICU. The hospitalization in ICU decision is taken together with the attending ICU physician.

- The designated personnel wearing the appropriate PPE (coveralls, N95 mask, goggles/face protection, gloves) to prevent COVID-19 infection during sampling, takes a respiratory sample for PCR test.
- The patient is isolated according to the contact and droplet isolation conditions.
- Empirical treatment according to the treatment algorithm is administered without waiting for the test result.
    - Hydroxychloroquine sulfate and/or favipiravir is administered in the empirical treatment.
    - Azithromycin is administered (contraindications should be assessed).

- Oseltamivir can be added to the treatment for the cases that influenza cannot be ruled out by considering the season and other factors. Oseltamivir should not be administered for cases who receive favipiravir or oseltamivir should be discontinued if favipiravir is administered later.
- Empirical antibiotic treatment can be administered to these patients since they have pneumonia supporting findings in imaging.

• Out of the patients who have positive test results:

o The patients whose symptoms and findings recovered complete the recommended treatment period. The discharged patients should be isolated at home for 14 days. o Other intensive care treatment options are considered according to the clinical conditions for the patients whose symptoms and findings continue, or clinical conditions got worse.

• Out of the patients who have negative test results:

o Another PCR sample is taken after 24 hours,

✦ The ones who have a second PCR (-), are assessed for other diagnostics.

✦ The ones who have PCR (+) are treated for COVID-19.

The patients who should be considered for ICU:

The patients who have

- Dyspnea and respiratory distress,
- Respiratory rate ≥30/min,
- $PaO_2/FiO_2<300$
- An increase of oxygen in monitoring,
- $SPO_2<90$ and $PAO_2<70$ despite an oxygen therapy of 5L/min,
- Hypotension (the systolic blood pressure<90 mmhg and more than a 40 mmhg decrease from the normal SBP and the mean artery pressure<65 mmhg, tachycardia>100/min),
- Dysfunctions in kidney function test and liver function test, acute organ dysfunction and immunosuppression conditions such as confusion, acute bleeding diathesis,
- High levels of troponin and arrythmia,
- Lactate < 2 mmol/L
- Skin disorders such as capillary return disorder and cutis marmaratus

It is recommended to ask for a consultation from the ICU physician to assess the patients who have the above-mentioned criteria. The hospitalization in ICU decision is taken together with the ICU physician.

Using Thorax CT for COVID-19 Patients

It is clearly stated when to perform thorax CT in probable/confirmed COVID-19 cases in the COVID-19 case management algorithm. Thorax CT is used to support diagnosis, demonstrate lung involvement, or evaluate the extent of infection in the lung for the probable/confirmed COVID-19 cases.

COVID-19 Infection Control in Radiology Units

Being in the same environment with a COVID-19 patient **without personal protective equipment** at a distance less than 1 meter and for longer than 15 minutes is considered a close contact for droplet infection. The infection can also be transmitted through contact with surfaces that are contaminated via speaking, coughing, and sneezing.
Therefore, the following droplet and contact measures should be taken in radiology diagnosis units.

1. The confirmed or probable COVID-19 patient should wear a mask.
2. Personal protective equipment (protective coverall, medical mask, goggles/face protection) should be available for the healthcare professional.
3. The healthcare professional should keep the distance of 1 meter with the patient, otherwise coverall, medical mask and goggles/face protection should be used.
4. Using gloves correctly is important for hand hygiene before and after using gloves. The same gloves should not be used elsewhere due to the contamination risk.
5. Hands should be washed with soap and water for 20 seconds or an alcohol-based hand antiseptic should be used for 20-30 seconds.
6. The room should be cleaned and disinfected after the patient is out of the room. Contaminated surfaces should be thoroughly cleaned. The surfaces can be disinfected with a hospital-preferred disinfectant after cleaning with water and soap. Chlorine tablet (according to product recommendations) or 1/100 diluted bleach (Sodium hypochlorite Cas No: 7681-52-9) can be used. Chlorine is a recommended disinfectant to be used for durable surfaces as chlorine compounds can create corrosion on the surfaces. 1/10 diluted bleach (Sodium hypochlorite Cas No: 7681-52-9) or chlorine tablet (according to product recommendations) can be used on surfaces contaminated with patient extracts. 70% alcohol can also be used for surface disinfection.
7. The personnel who is cleaning should use medical mask, coverall, gloves and googles.
8. Patient waste should be disposed in medical waste.
9. A new patient can be admitted after cleaning and disinfecting.

TREATMENT OF ADULT PATIENTS WITH COVID-19

The patients who apply with a mild disease, below 50 and do not have underlying comorbidities may not need hospitalization and can be monitored at home according to the recommendations. The need for followup in the hospital or at home is decided by the attending physician on a case-by-case basis.

Hospitalization or monitoring at home decision should be based on the clinical conditions, the need for a support treatment, risk factors for the development of a severe disease, whether the patient can self-isolate at home and whether the patient and the relatives can follow the recommendations.

It should be considered that the risk to develop a severe disease is higher in the second week, and patients who are being monitored at home, should be informed to apply to the hospital immediately if they develop difficulty in breathing, and fever. The patients to be monitored at home should be determined according to the "Patient Follow-up at Home" algorithm.

It is recommended that the patients with following conditions to be hospitalized since they have a risk for a severe disease and complications:

The patients who:

- Are above 50,
- Have comorbidities (cardiovascular diseases, DM, HT, cancer, chronic lung diseases, other immunosuppressive conditions),
- Have severe pneumonia criteria (confusion or tachycardia >125/min) or
- Have respiratory distress or tachypnea (>30/min) or hypotension <90/60 mmHg or SpO_2<92% or bilateral diffuse involvement in lung imaging,
- Have sepsis, septic shock
- Have cardiomyopathy, arrythmia or
- Develop acute kidney injury and
- Have adverse prognostic characteristics (blood lymphocyte count <800/µl or serum CRP>40 mg/l or ferritin >500ng/ml or D-Dimer >1000 ng/ml, etc.) in blood samples taken when they applied to the hospital

If bacterial or influenza pneumonia cannot be ruled out in possible COVID-19 cases with pneumonia, empirical treatment including these factors should be administered. The antibiotics to be administered in empiric treatment are selected according to the clinical conditions of the patient (community-acquired pneumonia, healthcare related pneumonia, sepsis condition, comorbidities, immunosuppression, application for healthcare in the last 3 months, prior use of antibiotics), local epidemiological data and treatment guides. Antibiotic therapy should be planned to include atypical pneumonia (beta-lactam antibiotic + macrolide or respiratory quinolone).

TREATMENT OF SARS-CoV-2 FOR COVID-19 PATIENTS

No reliability and effectiveness-proven antiviral treatment is yet available for COVID19. Nevertheless, there are more than 100 randomized controlled trials with many drugs, some of the results are expected to be published in the coming months.

It is known that the use of treatment options based on information obtained through randomized controlled studies and other scientific research is more rational. However, due to the urgency of the current situation and the limited scientific data, treatment options with limited data are widely used for these patients worldwide. The information obtained from SARS and influenza point out that early onset of antiviral treatments is more beneficial. Therefore, hydroxychloroquine therapy is suggested to start immediately for the symptomatic probable COVID-19 patients. The combined use of possible treatment options in COVID19 patients should be considered by keeping in mind all patient-specific and available literature and the interactions and adverse effects of the drugs used should also be considered. Hydroxychloroquine can prolong the QT interval and create a tendency for ventricular tachycardia. This risk is higher especially in elderly patients with cardiac comorbidity, who are using other drugs that prolong QT, and with electrolyte disorders. Therefore, it is necessary to make a risk assessment for QT prolongation in patients who are administered or already receiving hydroxychloroquine due to COVID-19, and if necessary, the decision should be taken by consulting a cardiologist.

All the recommendations about the antiviral treatment of COVID-19 in this guideline are put forward according to the present evidence and by the assessment of ongoing clinical trial protocols, and by presenting expert opinions on the issues where there is no evidence. The recommendations will be updated based on the results of the ongoing trials on the antiviral therapy of COVID-19.

Table 1 and Table 2 presents treatment recommendations for probable/confirmed COVID-19 patients. Alternative agents such as lopinavir / ritonavir can be evaluated for the patient with the support of the relevant literature for patients who cannot use these drugs due to various reasons.

Table 1. Treatment Recommendations for Confirmed COVID-19 Cases to be Monitored as Outpatients* and for Uncomplicated Covid-19 Cases or for Probable/Confirmed Cases with Mild Pneumonia*****

Medication Name	**Daily dosage Way of Intake**	**Treatment duration (day)**
Treatment for probable/confirmed COVID-19 patients		
Hydroxychloroquine**** 200 mg tablet	2x200 mg tablet oral, following 2x400 mg loading dose	5 days

NOTE: Oseltamivir should be administered to patients with clinical findings compatible with influenza, in which influenza cannot be excluded according to the season and other factors, or to patients with positive influenza diagnostic test. Oseltamivir is not recommended for the treatment of COVID-19.

* The available scientific data do not strongly recommend administering hydroxychloroquine to PCR positive asymptomatic COVID-19 patients. However, based on the general information that the drugs started early are more effective, hydroxychloroquine can be started if the physician evaluating the patient finds it appropriate and is careful about the side effects.

**a. Patients who have findings such as fever, muscle/joints paints, cough, sore throat, and nasal congestion and do not have respiratory distress, tachypnea and SPO_2<93%,

b. Patients who do not have underlying comorbidities (cardiovascular diseases, DM, HT, cancer, chronic lung diseases and other immunosuppressive conditions) and below 50,

c. Patients who do not have adverse prognostic characteristics (blood lymphocyte count <800/µl or CRP>40 mg/l or ferritin >500ng/ml or D-Dimer >1000 ng/ml, etc.) in the blood samples taken at the application,

d. Patients with normal chest X-ray and/or lung CT scan.

*** a. Patients who have findings such as fever, muscle/joints paints, cough, sore throat, and nasal congestion and whose respiratory rate is <22/minute and SpO_2 level in the air of the room is above 93%,

b. Patients who do not have underlying comorbidities (cardiovascular diseases, DM, HT, cancer, chronic lung diseases and other immunosuppressive conditions) and below 50,

c. Patients who do not have adverse prognostic characteristics (blood lymphocyte count <800/µl or CRP>40 mg/l or ferritin >500ng/ml or D-Dimer >1000 ng/ml, etc.) in the blood samples taken at the application,

d. Patients with mild pneumonia findings in lung X-ray or chest CT scan.

**** Hydroxychloroquine can prolong the QT interval and create a tendency for ventricular tachycardia. This risk is higher especially in elderly patients with cardiac comorbidity, who are using other drugs that prolong QT, and with electrolyte disorders. It is necessary to make a decision by conducting a risk assessment and cardiology consultation when necessary in terms of QT. (For further information: https://www.acc.org/latestin-cardiology/articles/2020/03/27/14/00/ventricular-arrhythmia-risk-duetohydroxychloroquine-azithromycin-treatment-for-covid-19)

Table 2. Treatment Recommendations for Covid-19 Cases with Hospitalization Indications

Medication Name	**Daily dosage Way of Intake**	**Treatment (day) duration**
Treatment for uncomplicated* probable/confirmed COVID-19 cases		
Hydroxychloroquine [1] tablet 200 mg -/+	2x200 mg tablet oral 500 mg tablet oral on the first day, 250 mg per day for the following 4 days	5 days 5 days

[1] Hydroxychloroquine can prolong the QT interval and create a tendency for ventricular tachycardia. This risk is higher especially in elderly patients with cardiac comorbidity, who are using other drugs that prolong QT, and with electrolyte disorders. It is necessary to make a decision by conducting a risk assessment and cardiology consultation when necessary in terms of QT. (For further information: https://www.acc.org/latestin-cardiology/articles/2020/03/27/14/00/ventriculararrhythmia-risk-due-tohydroxychloroquine-azithromycin-treatment-for-covid-19)

Azithromycin[1]		
Treatment for probable/confirmed COVID-[2] cases with mild pneumonia (who do not have severe pneumonia findings)**		
Hydroxychloroquine[1] tablet oral following loading dose -/+ 5 days 500 mg tablet oral on the Azithromycin[2] first day, for the following 4 days	2x200 mg 5 days tablet 200 mg 2x400 mg 250 mg per day	
Treatment for probable/confirmed COVID-19 with severe pneumonia* **		
Hydroxychloroquine [3] tablet 200 mg AND/OR Favipiravir[1] -/+ Azithromycin[2]	2x200 mg tablet oral following 2x400 mg loading dose 2x1600 mg loading dose, 2x600 mg maintenance dose 500 mg tablet oral on the first day, 250 mg per day for the following 4 days	5 days 5 days 5 days
Treatment for the patients whose clinical symptoms or pneumonia symptoms progress while receiving hydroxychloroquine therapy		
Favipiravir[1] 200 mg tablet 5 days 2x600 mg maintenance stopped after 10 days)	2x1600 mg loading dose (Hydroxychloroquine treatment should be	dose dose
Treatment for pregnant women with confirmed COVID-19** **		
Hydroxychloroquine[1] 200 mg tablet or Lopinavir 200 mg tablet	2x200 mg tablet oral 5 2x2 tablet oral 10-14	days days mg/ritonavir 50

[1] It may not be administered according to the decision of the attending physician or according to the patient's underlying risk factors. Both azithromycin and hydroxychloroquine can prolong the QT interval and create a tendency to ventricular tachycardia. Administering azithromycin to the patient should be considered with this information and by the attending physician. Especially in elderly patients with cardiac comorbidity, using other drugs that prolong QT, and with electrolyte disorders the risk is higher. For this reason, in patients who will start or take hydroxychloroquine ± azithromycin due to COVID-19, it is necessary to make a risk assessment for QT prolongation and to make a decision by conducting a cardiology consultation when necessary (for more detailed information, the following link can be used https://www.acc.org/ latest-in-cardiology/articles/2020/03/27/14/00/ventricular-arrhythmia-risk-dueto-hydroxychloroquine-azithromycin-treatment-for-covid-[2])

[3] It should not be used for pregnant women, puerperant or nursing mothers.

Consult the related section for the identification and treatment of the patient who is thought to have MAS.

NOTE: Oseltamivir should be administered to patients with clinical findings compatible with influenza, in which influenza cannot be excluded according to the season and other factors, or to patients with positive influenza diagnostic test. Oseltamivir is not recommended for the treatment of COVID-19. Oseltamivir should not be administered, or it should be discontinued for cases to which favipiravir is started or added.

* a. Patients who have findings such as fever, muscle/joints paints, cough, sore throat, and nasal congestion but do not have respiratory distress, tachypnea and SPO_2<90%, b. Patients who have a normal chest X-ray or lung CT scan

** a. Patients who have findings such as fever, muscle/joints paints, cough, sore throat, and nasal congestion and whose respiratory rate is <30/minutes and SPO_2 level in the room air is above 90%,

b. Patients who have mild pneumonia findings in chest X-ray or lung CT scan.

*** Patients who have tachypnea (≥ 30 / minute), whose SpO2 level in the room air is below 90% and have bilateral diffuse pneumonia on chest x-ray or lung CT scan.

**** It has been reported that pregnancy does not pose any extra risk for severe COVID-19. The option of monitoring without treatment for uncomplicated COVID-19 infection in pregnant women should be considered first. Treatment should be considered in pregnant women with possible diagnosis if there is a risk factor or if there is a severe course.

SUPPORT THERAPY FOR COVID-19 PATIENTS

Corticosteroid therapy: It is recommended with a weak evidence level of 1-2 mg / kg / day and methylprednisolone 5-7 days only in ARDS cases with mechanical ventilation in the European Society of Intensive Care Medicine Sepsis Guideline adapted to COVID-19 published on 20.03.2020. It is not recommended for non-ARDS pneumonia.

"Immune Plasma Application for ARDS cases who have bilateral infection in CT scan and have positive COVID-19 clinical symptoms" can be administered with the authorization of relevant councils of the Ministry of Health.

"Alternative treatments like stem cells for COVID-19 patients" can be administered with the authorization of relevant councils of the Ministry of Health.

General approach to suspicious/confirmed 2019-nCoV infection

1. Patient should be equipped with medical masks and should be taken into a separate area at a distance of at least 1 meter with other patients.
2. If possible, the patient should be taken into a single room with private bathroom and toilet, droplet isolation methods are applied.
3. Basic personal protective measures should be taken for individuals who contact with the patient (attendants, patient relatives). The room should be regularly ventilated and cleaned.
4. Vital signs (heart rate, rhythm, respiration rate, blood pressure, body temperature, oxygen saturation) of the patient should be regularly tracked.
5. Patient should be subject to complete blood count, C-reactive protein, procalcitonin, kidney and liver parameters, cardiac enzymes, coagulation parameters, artery blood gas, lactate and lung xrays and results should be evaluated. Blood culture should be taken before antibiotic treatment.
6. Conservative fluid treatment should be administered to the patients without a shock status. No routine maintenance saline solution is necessary. Please remember that uncontrolled fluid treatment may aggravate oxygenation.
7. Medical mask on nasal oxygen cannula may be applied on hypoxemic patients in order to mitigate infection risks through droplet.
8. Oxygen treatment with 5L/min. nasal or standard face mask should be administered to patients with severe respiratory infection, ARDS, hypoxemia or shock status. Target oxygen saturation is titrated as > 90% (92-95% for the pregnant women).
9. In cases where higher oxygen fraction is required, non-breathing reservoir masks with added exhalation filter may be used if accessible.
10. Patients considered to be sepsis according to laboratory and clinical evaluations should start empirical antimicrobial treatment within the first hour after admission. The antibiotic treatment should be selected according to the clinical condition (community-acquired pneumonia, healthcare related pneumonia, sepsis condition, comorbidities, immunosuppression, application for healthcare within the last 3 months and prior use of antibiotics), local epidemiological data and treatment guides. Antibiotic treatment should include atypical pneumonia in case of severe pneumonia. Neuraminidase inhibitor may also be added into the treatment depending on risk factors and clinical picture for influenza.

11. Samples should be taken both from upper respiratory tract (nasopharyngeal and oropharyngeal swab) and lower respiratory tract (phlegm, endotracheal aspirates, bronchoalveolar lavage) and if possible, respiratory tract bacterial and viral panel should be operated. It is recommended to avoid bronchoscopy just for sampling.
12. Patients should be monitored closely for progressive respiratory failure and sepsis as they may display rapid clinical deterioration.
13. Patients should be evaluated for comorbid diseases, and the treatment for such diseases should be regulated.
14. Routine administration of steroids is not recommended but to be used in case of accompanying comorbid diseases or other reasons (chronic obstructive lung disease, refractory septic shock etc.)
15. Inhaler drugs should be applied with metered dose inhalers if possible, considering the risk of infection through nebulization.

MANAGEMENT OF PATIENTS WITH SEVERE PNEUMONIA

COVID-19 findings can be mild, moderate and severe. Severe disease may manifest itself in forms of severe respiratory infection (severe pneumonia), Acute Respiratory Distress Syndrome (ARDS), sepsis, septic shock, myocarditis, arrhythmia and cardiogenic shock and multiple organ failure. Respiratory failure is frequently displayed as hypoxemic respiratory failure and less frequently as hypercapnic respiratory failure. Furthermore, decompensated heart failure and chronic lung diseases inflammations may also accompany these patients. Such patients should be monitored under intensive care.

Severe disease developing cases are more common in males (male/female: 2:1). While hypertension and diabetes mellitus are the most frequent type of comorbid diseases, advanced age and comorbidities are other risk factors for developing a severe disease.

Severe respiratory tract infection (pneumonia): If patients with fever and respiratory infection symptoms have

- Respiration rate > 30/min. and/or
- Severe respiratory distress (dyspnea, use of extra respiratory muscles)

And/or

- Oxygen saturation in room air < 90% (patient receiving oxygen PaO2/FiO2 < 300), a chest CT should be planned.

Peripherally located, widespread patched ground glass opacities in bilateral lobular style are reported as characteristic thorax CT findings of COVID-19 pneumonia.

CT findings in a series of 21 inpatient cases who have developed COVID-19 pneumonia were classified under four stages by their radiological prognosis:

1. Early period (days 0-4 days): ground glass opacities, lower lobe and frequently bilateral involvement
2. Progression period (days 5-8): Rapid progression, bilateral multi-lobular ground glass opacities
3. Peak time (days 9-13): more common consolidations with low progression in involvement zones
4. Resolution period (after day 14): regression of radiological densities up to 26 days upon controlling the infection.

Acute Respiratory Distress Syndrome (ARDS);

- Respiratory distress occurring or deteriorating in the last week
- Pleural effusion, collapse or nodular bilateral opacities in radiological terms
- Respiratory failure that cannot be explained with heart failure or excess volume
- Mild ARDS: 200 < PaO2/FiO2 ≤ 300 (PEEP ≥ 5 cmH20)
- Moderate ARDS: 100 < PaO2/FiO2 ≤ 200 (PEEP ≥ 5 cmH20)
- Severe ARDS: PaO2/FiO2 ≤ 100 (PEEP ≥ 5 cmH20)

Sepsis;

Symptoms of organ failure coexisting with a suspicious or proven infection (changes in consciousness, respiratory distress, low oxygen saturation, decreased urination, increased creatinine, increased heart rate, weak pulse, cold extremities or low blood pressure, symptoms of coagulopathy, thrombocytopenia, increased level of lactate or hyperbilirubinemia)

Septic Shock;

Hypotension resistant to fluid therapy, need for vasopressor to keep average arterial pressure at

≥ 65 mmHg and lactate level of > 2 mmol/L

Please remember that patients may develop myocarditis and associated cardiogenic shock. **Approaches and methods to be followed in case of severe respiratory infection, hypoxemic respiratory failure or ARDS:**

1. Severe COVID-19 infection is a condition that starts with flu-like complaints initially and progresses with hypoxemic respiratory failure starting from the 7^{th} to 10^{th} days. The compliance is preserved in 2/3 of the patients and the disease does not progress like a classic ARDS, on the other hand, only 1/3 of the patients have low compliance with classic ARDS according to the attending physicians.
2. Therefore, closely monitored oxygen therapy may be enough for most of the patients. Oxygen therapy can be applied by conventional low flow (<15 L / min) methods or high flow nasal cannula. The aim is to have oxygen saturation> 92%. Up to 6 L / min of oxygen can be delivered with the nasal cannula and the FiO_2 should not exceed 45%. Therefore, the oxygen should be delivered to patients who need more than 6L/minute with a simple face mask and a non-breathing (valve) reservoir (bagged) mask, respectively. The oxygen therapy should start with a simple face mask with 5L/min and should go up to maximum 8L/minute. The FiO2 reached is at most 60%. The FiO_2 level with a non-breathing (valve) reservoir (bagged) mask is >85% with 1015L/min flow rate. However, it should be considered that >6 hours of FiO_2>60% causes oxygen toxicity. In cases where oxygenation cannot be corrected with these methods, oxygen should be applied in such a way that the FiO_2 should be <60% by increasing the current (maximum 60 L / min) with the high flow nasal cannula system if possible. The high flow oxygen should be applied in negative pressure rooms due to the aerosol generation risk, if this is not possible, high protection with PPE is necessary in single rooms.
3. The patients receiving oxygen therapy should be monitored for respiratory rate, dyspnea, usage of additional respiratory muscles, depth of breathing and arterial blood gas as needed, as well as SO_2. Mechanical ventilation should be considered with intubation in cases where the respiratory workload increases (dyspnea, follow-up (≥30 / min), use of additional respiratory muscles, paradoxical breathing, respiratory alkalosis (PaCO2 <35 mmHg, pH> 7.45)).
4. Non-invasive mechanical ventilation (NIMV) can be applied if the patient does not need intubation immediately. Patients should be followed closely for clinical deterioration, if no positive response was obtained in the first few hours (refractory hypoxemia, follow-up, tidal volume> 9 ml / ideal kg), patients should be evaluated for invasive mechanical ventilation. NIMV can be applied with an oronasal, full-face or helmet mask. It should be applied with intensive care ventilators or dual circuit ventilators. A viral/bacterial filter should be added to the inspiratory and excipient outputs of the circuits. NIMV should be avoided in patients with secretions that cannot be controlled, at risk of aspiration, hemodynamic disorder, multiorgan failure or impaired mental status. NIMV should be applied in negative pressure rooms due to the aerosol generation risk, if this is not possible, high protection with PPE is necessary in single rooms.
5. The prone position has positive effects on hypoxia in non-intubated patients with lung involvement. Patients should be given prone position for long periods of time, even if they are not intubated. If there are no contraindications in severe ARDS cases (PaO2 / FiO2 <150) under mechanical ventilation, more than 12 hours of prone position should be applied daily.
6. Hyperpyrexia should be checked quickly to prevent endothelial damage by cytokine storm.
7. Hypercoagulability and fever and inflammation-related hypovolemia may develop in most patients. Using diuretic (furosemide) should be avoided unless hypervolemia occurs and patients should be tried to be kept euvolemic. However, conservative fluid support should be given if there is no evidence of tissue hypoperfusion in classical ARDS management under mechanical ventilation.
8. Rapid sequence intubation protocol should be applied by healthcare workers who are educated and experienced in endotracheal intubation. Intubation should be applied through video laryngoscope, if possible. Patients, whose airways are difficult, may be applied intubation with flexible bronchoscopy. However, bronchoscopy can also generate aerosol. Intubation should be applied in negative pressure rooms due to the aerosol generation risk, if this is not possible, high protection with PPE is necessary in single rooms. Bag-valve masks should not be used during preoxygenation, if possible. Neuromuscular blockers may be used to suppress coughing prior to intubation. Positive pressure ventilation must not be initiated before inflating endotracheal cuff. Active humidification should be preferred over humidifying filters. Heat-moisture exchanger (humidifier) filter can be used, however, active humidification should be preferred in case of obturator and an increase in dead space. The connection of the mechanic ventilator should not be disconnected, unless necessary, personal protective equipment should be used for the cases requiring the disconnection. Closed system aspiration method should be used, if possible. Bronchoscopy procedures should not be applied, unless necessary, metered dose inhaler should be preferred for bronchodilator treatment.
9. Low tidal volumes (4-8 mL/ideal kg) and low inspiratory pressures (plateau pressure < 30 cmH_2O: driving pressure (plateau pressure – PEEP) <14 cmH_2o) should be applied to the patients developing ARDS. Tidal volumes may increase to 8 mL/kg in cases of hypercapnia and pH<7.5. Permissive hypercapnia can be allowed in other cases. PaO_2 60-85 mmHg, SO_2 88-95% is enough.
10. Sedation and neuromuscular agents can be applied in the first 24-48 hours; however, oversedation should be avoided generally, or the sedation should be mild. Neuromuscular blocking agents can be applied in ventilator incompatibility, or resistant hypoxemia or hypercapnia despite sedation in the severe ARDS, although the use of neuromuscular blocking agents is not routinely recommended.
11. Recruitment and high PEEP values may not be required if compliance is good in intubated patients (static> 40 mL / cmH2O). However, patients with low compliance should be treated as a classic ARDS patient, especially in moderate to severe cases (PaO2 / FiO2 <200) PEEP, which provides the best compliance and oxygenation should be applied without disrupting hemodynamics.
12. Inhaled nitric oxide or extracorporeal membrane oxygenation (ECMO) may be considered for ARDS patients as a last resort. Patients should be referred to the experienced institutions for ECMO and transferred, if necessary.

Ideal kg to calculate tidal volume
Males 50 + (0.91 × [height cm − 152.4])

Females 45.5 + (0.91 × [height cm − 152.4]

Low PEEP

FiO2	30	40	40	50	50	60	70	70	70	80	90	90	90	100
PEEP	5	5	8	8	10	10	10	12	14	14	14	16	18	18-24

High PEEP

FiO2	30	30	30	30	30	40	40	50	50	50-80	80	90	100	100
PEEP	5	8	10	12	14	14	16	16	18	20	22	22	22	24

Approaches and methods to be applied in case of septic shock

1. 30 ml/kg isotonic crystalloid fluid (normal saline or ringer's lactate solution) should be applied in the first hour for sepsis. However, hypervolemia should be avoided, and fluid treatment should be carried out carefully in ARDS patients.
2. In case of shock status despite fluid resuscitation or in case of too low hypotension, vasopressor supports should be immediately given with average arterial pressure at 65 mmHg.
3. Lactate should be monitored.
4. Noradrenalin should be selected as the first option vasopressor agent.
5. Following therapy should be identified based upon cardiac output and fluid responsiveness of patient.

Tocilizumab and anti-inflammatory treatment recommendations

There is no evidence that anti-cytokine therapies can be beneficial for ARDS, which has 53 years of history, and sepsis, which is known for a longer time, by definition, and this therapy is not administered routinely. Randomized controlled studies show that lung protective mechanic ventilation increase survival in ARDS treatment. Sepsis is an immunosuppressive disease, and nosocomial and opportunistic infections cause deaths. There are also data indicating that treatments such as monoclonal tocilizumab antibody with antiIL6R effect can cause ARDS.

However, there may be differences in responses to the sepsis develop due to different infections, and it is known that some patients may develop symptoms of macrophage activation syndrome (MAS) characterized by cytokine storm due to hyperinflammatory response or hemophagocytic lymphohistiocytosis (sHLH), in other words. Subgroup examinations of treatments of sepsis patients revealed that patients with accompanying MAS findings could benefit from anti-cytokine treatments.

Identifying Macrophage Activation Syndrome

It is known that MAS could develop in the course of COVID-19; however, there are no high-quality evidence showing the frequency and the definitive treatment. It is thought that 10% of COVID-19 patients could develop a severe disease, and cytokine storm as a result of MAS could affect the worsening of the disease.

Therefore, the timely and correct identification of the patient group that can benefit from anti-cytokine treatments is important for planning an effective and safe treatment. Even though the cases and observations until today show that MAS in COVID-19 patients resemble to hereditary HLH or MAS in rheumatic diseases, it should be considered that not all MAS/HLH symptoms could develop based on the course of the disease, and other scores or criteria used for the diagnosis of other diseases may not be always helpful. Therefore, the MAS diagnosis should not be based on one-time cross-sectional assessments, and changes in clinical and laboratory findings within hours or days should be considered.

Symptoms and findings such as persistent fever despite treatment, constantly high or increasing CRP and ferritin values, high D-dimer values, lymphopenia and thrombocytopenia, deterioration in liver function tests, hypofibrinogenemia or increase in triglyceride values show that MAS is accompanying the disease. **Considering the increase in CRP, ferritin and D-dimer values and/or decrease in lymphocyte and thrombocyte count in consecutive evaluations are important to diagnose MAS findings, rather than setting a threshold value for laboratory findings.** In addition, showing that there are no secondary infections with culture and normal procalcitonin values are important.

MAS is a complication that requires close monitoring and suppressing the cytokine storm may be difficult or even impossible, if MAS is not treated in few hours after it is diagnosed. Rheumatology and hematology physicians should also be present during the verification of MAS diagnosis, and MAS patients should receive treatment as soon as possible.

Tocilizumab in MAS Therapy

It has been reported that tocilizumab is effective for COVID-19 even though the data is based on open label trials with few patients. The efficacy of both tocilizumab and other IL-6 blocker biological drugs and IL-1 blocker anakinra drug for severe COVID-19 patients is still being researched with controlled clinical trials.

Tocilizumab can be recommended for COVID-19 patients who develop MAS findings since the drug is easy to access. **Tocilizumab can be administered with a dose of 8 mg/kg (800 mg maximum). 400 mg or 800 mg IV can be administered at a time based on the severity of the patient's findings. If the first dose is administered as 400 mg, 100-400 mg dose can be administered again in 12-24 hours based on the changes in clinical and laboratory findings.**

If the patient still has MAS findings even though 800 mg dose has been administered, another dose of tocilizumab (200 or 400 mg) should not be administered before consulting a rheumatology and/or hematology physician and considering alternative treatment options.
Tocilizumab should not be used for pregnant patients, and patients with neutropenia (<500/mm3), active tuberculosis, active Hepatitis B or C, allergy, and hypersensitivity, liver functions and thrombocyte count should be monitored, and patients with diverticulitis history should be monitored closely for gastrointestinal perforation.

Applying Tocilizumab Therapy

A volume of liquid (10 ml for 200 mg, 20 ml for 400 mg and 40 ml for 800 mg) is drawn from the sterile 100 ml isotonic sodium chloride (0.9%) infusion solution under the aseptic conditions to the calculated tocilizumab concentration for the patient. The amount of tocilizumab concentrate to be applied is withdrawn from the vial and added to the 100 mL infusion bag. The final fluid volume in the infusion bag should be 100 ml. The solution in the bag is slowly turned upside down and mixed without foaming. It is administered intravenously to the patient within one hour.

Monitoring the Tocilizumab Therapy Administered Patients

Additional observations (such as serum IL-6 levels, serum amyloid A protein) in the follow-up of the acute phase response should be used since CRP levels could drop regardless of the regardless of the clinical effectiveness of the drug, after treatment with tocilizumab. It should be known that the decrease in ferritin levels will not be rapid when the patient responds to the treatment and high ferritin values for a while should not be regarded as a treatment failure. In addition, inflammation findings (fever, leucocyte, CRP, ferritin, etc.), hypoxia, respiratory failure, shock and multiple organ failures should also be considered while assessing the effectivity of the treatment.

The fact that the inflammation indicators such as fever, CRP, leucocyte increase may be suppressed when there are secondary infections in patients receiving anti-cytokine treatment should be considered, and additional evaluations such as blood and tissue cultures and procalcitonin should also be utilized for diagnosis.

Other Options for MAS Therapy

Anakinra (recombinant IL-1 receptor antagonist, Kineret 100 mg ready syringe) treatment is also a safe option for patients who develop MAS findings, if the drug can be procured. The short half-life (4-6 hours) and the advantages of adjusting the dose (2 10 mg / kg) and the route of administration (subcutaneous or intravenous) can offer safer treatment. Depending on the severity of the patient's clinical findings, the dose can be adjusted from 100 mg subcutaneous injection to 200 mg IV three times a day, if there are very severe findings. The daily dose can be decreased for the responding patients, or the required dose usage can continue based on the patient's needs. CRP can be used as a safety test to follow acute phase response for the patients receiving anakinra treatment since it does not block CRP synthesis like Tocilizumab.

Corticosteroids should not be administered as much as possible; however, in mandatory situations the doses should not exceed 0.5-1 mg/kg and the ESICM guidelines should be followed in case of resistant shock and ARDS.
JAK inhibitors (ruxolitinib and others) can also be used if anti-cytokine treatments are not enough. IVIg treatment can be administered for 2g/kg/day for total 2 days with monitoring Ig levels (should not be used in case of IgA deficiency).

Close follow-up and treatment plans are required for coagulation disorders and especially disseminated intravascular coagulopathy findings accompanying the sepsis table and MAS findings.

As a result, biological anti-cytokine treatments such as tocilizumab and anakinra can be used with caution only to suppress the uncontrolled inflammation response in COVID-19 patients who develop MAS clinical and laboratory findings described above. Rheumatology and hematology physicians should be consulted to adjust the doses and duration of the treatment, if necessary. **Anti-cytokine treatments should not be used as alternative treatments for COVID-19 patients with pneumonia who are not responding to the standard treatments, and the patients who are receiving these therapies should be monitored closely for secondary and opportunistic infections.**

Coagulopathy Management for COVID-19

Thromboembolic event development by various mechanisms have been observed within the course of COVID-19.

The possible mechanisms can be grouped into three effect mechanisms.

1. Binding of the virus to ACE2 and/or direct endothelial damage
2. Vascular micro thrombotic disease observed in sepsis (complement activation and endothelial damage and inflammatory and micro thrombotic pathway activation)
3. Stasis related to inactivity/hospitalized patients

Death was reported more frequently in patients with coagulopathy in the reports from Wuhan/China.

Recommendation:

Coagulopathy monitoring should start with patient diagnosis (Table 3). The monitoring should be done once in 1-2 days via disseminated intravascular coagulation (ISTH Criteria for Disseminated Intravascular Coagulation (DIC).

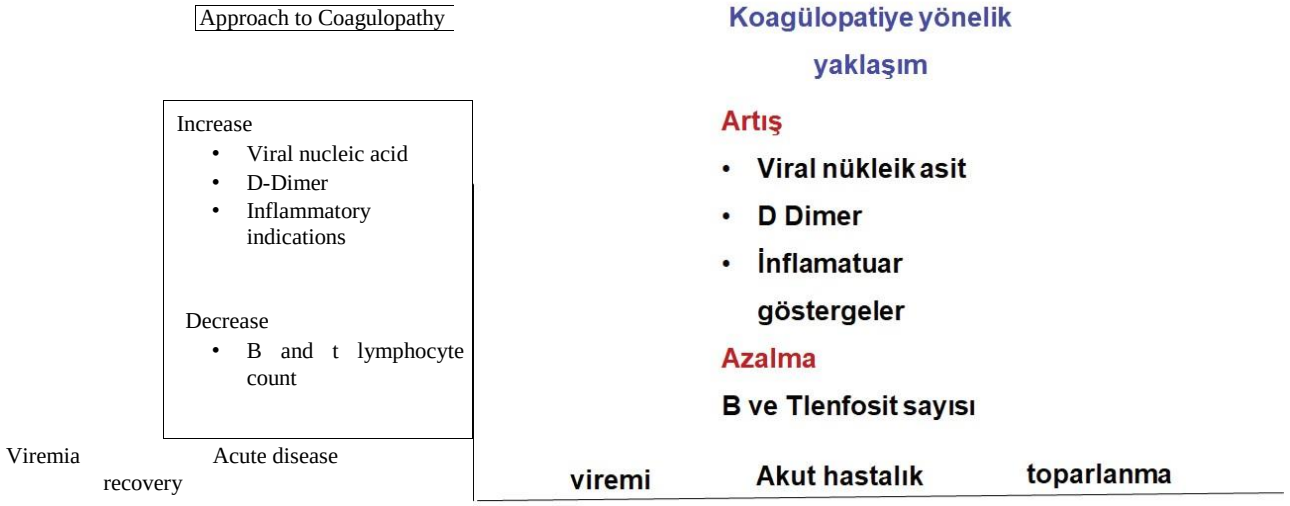
Table 3. Coagulopathy indicators to be monitored during COVID-19

Laboratory test	Significant result
Thrombocyte	<100.000 /µl: (sepsis and high mortality) <150.000/µl: (indicator of a severe course)
PT	Elongation for 3 seconds: (patient with probability of ICU indication)
aPTT	Elongation for 5 seconds
Fibrinogen	<150mg/dl (DIC diagnosis according to ISHT, high mortality)
D-Dimer	x4 increase (patient at high risk)

The studies show that using heparin for COVID-19 patients decrease the mortality significantly. Heparin binds inflammatory cytokines, inhibit neutrophil chemotaxis and leukocyte migration, neutralize positively charged peptide C5a and sequestrate acute phase proteins, in addition to its anticoagulant effect.

Warning: It is observed that coagulopathy usually becomes evident on the 7th day of viremia. Plasma tissue factor and plasminogen activator inhibitor-1 were found higher in patients with ARDS than in patients without ARDS.

Figure 6. Coagulopathy timing within COVID-19



It has been reported that administering heparin decreases the mortality if D-Dimer increases (the threshold is not clear; x6-x8 based on experience) and/or the SIC criterion>4 in managing COVID-19 related coagulopathy (Table 4).

Table 4. The sepsis related coagulopathy (SIC) is diagnosed if scoring is > 4

	0 point	**1 point**	**2 points**
PT	< 1.2	>1.3	> 1.4
Thrombocyte ($x10^9$/L)	>150	<150	<100
Total SOFA (4 criteria)	0	1	>2

Stasis related venous thromboembolism prophylaxis related to inactivity/hospitalization: Like every hospitalized patient, COVID-19 patients carry the risk of immobility-related stasis and stasis-related thromboembolic events. High D dimer and fibrin degradation products indicate poor prognosis.

Coagulopathy monitoring and treatment for COVID-19 patients

Coagulopathy monitoring should star with the patient diagnosis. **Thrombosis heparin prophylaxis should be applied to all COVID-19 patients.**
Antithrombin III deficiency is between 1/500 - 1/5000 and routine screening has not yet been suggested for the rare condition observed. Continuing heparin prophylaxis is recommended until inflammation findings improve.

Thrombosis prophylaxis in patients with D-dimer <1000ng / ml CrCl >: 30ml/min:

BMI <40kg/m2: Enoxaparin 40mg/day

BMI > 40/kg/m2: Enoxaparin 40mg 2x1 sc

CrCl < 30ml/min

Low-molecular-weight-heparin is not recommended generally. Standard heparin 5000 U sc 2x1 or 3 x1 or reduced dose low-molecular-weight-heparin is recommended.

Patients with D-dimer> 1000 ng/ml or severe disease

Enoksaparin: 0.5mg/kg 1 sc in 12 hours

CrCl < 30ml/min: Standard heparin 5000 U sc 2x1 or 3 x1 or reduced dose low-molecular-weight-heparin is recommended.

Patients with a previous history of atrial fibrillation or venous thrombosis >90 days: No change in

heparin prevention.

<90 days: Heparin prevention is done at the treatment dose.

Blood count	Hgb <7gr / dl: 1 U erythrocyte suspension Thrombocyte: <20.000/µl: 1 apheresis platelet or 2 4-pooled platelets
Pneumatic pressure application	It will be beneficial to apply intermittent pneumatic pressure in every patient who cannot move. Mechanical thromboprophylaxis is recommended in patients with a platelet count of <30,000 / µl.

Managing arterial thromboembolic event prevention

Conversion to low-molecular-weight-heparin should be considered in patients using oral anticoagulants or vitamin K antagonists due to atrial fibrillation, or who has a history of stroke or a venous thromboembolism.

The RAS pathway is activated when the virus causes a decrease in ACE_2 expression. RAS activation theoretically carries the risk of pulmonary embolism, pulmonary hypertension and fibrosis with the development of platelet adhesion and aggregation.
Dipyridamole (DIP) as anti-inflammatory and antiaggregant: In a study in China, it was concluded that DIP treatment prevented hyper coagulopathy in several patients (150mg / day) with COVID when DIP is given. The antiviral effect has been suggested with the support of in vitro study by preventing viral replication with phosphodiesterase effect, in addition to the antiaggregant and anti-inflammatory effect of DIP. The efficacy of C5a inhibitor eculizumab in TTP-like thrombotic microangiopathy associated with cytokine release and endothelial damage is still in the clinical study phase.

Bleeding in COVID-19 patients

A decrease in serum fibrinogen level is frequently observed from day 7.

Table 5. Disseminated Intravascular Coagulation (DIC); ISTH Criterion > 5 points indicates DIC.

Thrombocyte x 10^9/L	>100 50 - <100. < 50	**0 Point** **+1 Point** **+2 Points**
D-dimer/increase in fibrin degradation products	None Mild increase Severe increase	**0 Point** **+1 Point** **+2 Points**

Elongated PT	< 3 seconds 3 - < 6 seconds > 6 seconds	**0 Point** **+1 Point** **+2 Points**
Fibrinogen g/L	>1 <1	**0 Point** **+1 Point**

DIC management

Coagulation factor replacement should not be performed in patients without bleeding unless it is necessary.

Blood product replacement should be considered if there is major bleeding with the DIC diagnosis.

Major bleeding is defined as blood pressure <90mm Hg and/or heart rate> 110/minute

1. **Platelet transfusion**: In case of thrombocytopenia <50.000 / µl, 1 apheresis unit or 1 pool unit of 4 is used.
2. **Fresh frozen plasma:** In case of bleeding and PT (3secs) and / or aPTT elongation (5secs), approximately 4 units fresh frozen plasma is administered in the form of 10-15ml/kg every 6-8 hours.
3. **Hypofibrinogenemia (<150mg / dl):** 4 units of fresh frozen plasma or 1U / 10kg cryoprecipitate, or 3-4 grams of fibrinogen could be administered.

Alleviation of antithrombin, recombinant thrombomodulin, and excessive thrombin formation based on hydroxychloroquine can be counted within the approaches that are not yet evidence-based.

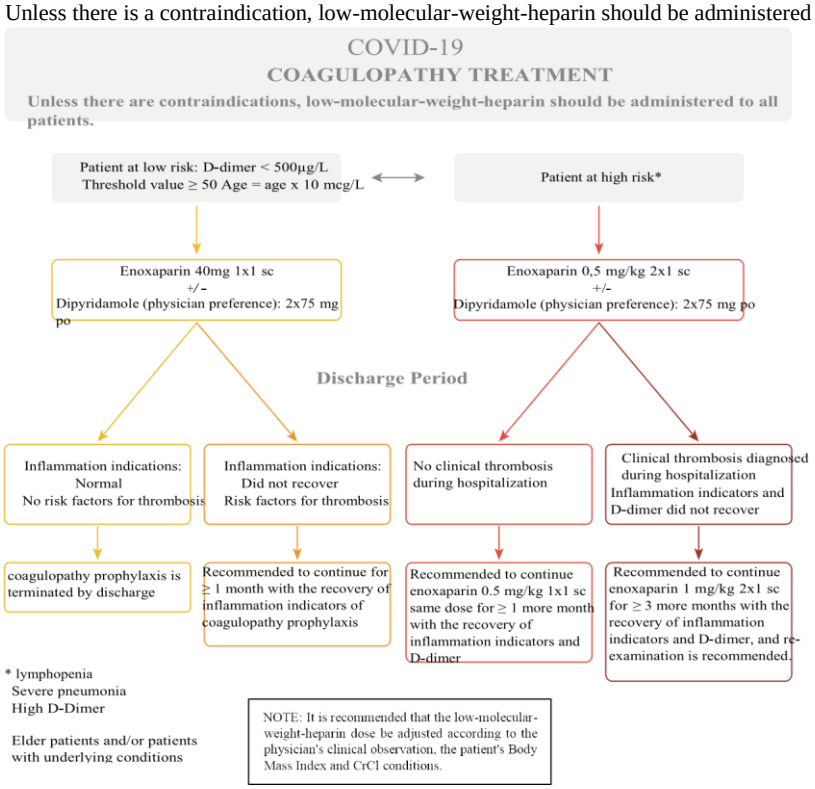
Antiviral agents may have a role in the tendency to bleed:

Ribavirin: Affects the warfarin dose.

Lopinavir/ritonavir: When using CYP3A-mediated drugs (rivaroxaban and apixaban), the dose should be reduced, or these drugs should not be used together. In addition, CYP3A4 inhibition mediates the P2Y12 inhibitors. Thus, clopidogrel and prasugrel cause a decrease in the active metabolite serum concentration. The level of ticagrelor increases.

COVID -19 COAGULOPATHY TREATMENT

Unless there is a contraindication, low-molecular-weight-heparin should be administered to every patient.



MANAGEMENT AND TREATMENT OF CHILDREN WITH COVID-19

There is not enough scientific evidence on the therapies of children with COVID-19. Therefore, treatment recommendations regarding children with COVID-19 should be planned according to the studies on adults and decided based on the conditions of the

child patient. There were no deaths between the ages of 0 and 9 since the beginning of the COVID-19 outbreak until March 22, 2020. The death rate has been reported as 0.2% for children between the ages of 10 and 19. It can be said that the clinical picture is mild when these rates and the data published so far are considered. In addition, the probable side effects should be considered while deciding for a treatment for children. Treatments for children should be planned accordingly to the case severity and individually.

Triage

- Children with fever, cough, and respiratory distress and their families are transferred to a special triage area by wearing a surgical mask.
- The doctors and nurses enter the triage area by wearing the suitable personal protective equipment (coverall, medical mask, goggles/face protection, gloves).
- Vital findings are checked (heart rate, heart rhythm, respiratory rate, blood pressure, body temperature and oxygen saturation if the conditions are suitable).
- The patient whose general conditions are not stable, is admitted to the relevant unit with respiratory and circulation support.
- The patient anamnesis is taken.
- The patient is examined.

COVID-19 Test

I. Epidemiological Properties:

a. Assessment of the household
   i. An individual hospitalized with a respiratory infection diagnostic in the last 14 days,
   ii. An individual who is diagnosed with COVID-19,
   iii. An individual with fever and cough or with respiratory distress with or without fever,
   iv. A contact history with an individual diagnosed with COVID-19.

b. Contact history with a COVID-19 case

II. Complaint and Symptom Findings

a. Fever history of the child or the measured fever value is 38.0 0C or above,
b. Lung findings in auscultation,
c. Tachypnea,
d. Cough with a new onset,
e. Oxygen saturation in the room is 92% or lower.

III. PCR test is required for the following:

a. At least I or II is present,
b. At least two items from II (not being able to relate each item with other reasons)
c. 2 or more COVID-19 cases within the same household,
d. Babies who are younger than 9 months and mothers diagnosed with COVID-19

IV. Laboratory and Imaging

a. The following tests may be required.

i. Blood tests: If the doctor deems it necessary, complete blood count, urea, creatinine, sodium, potassium, chlorine, AST, ALT, total bilirubin, LDH, CPK, D-dimer, troponin, C-reactive protein values may be requested if the physician deems fit. b. Imaging:

i. Lower dose CT is recommended if there are auscultation findings, at least one condition from I and II of the test criteria, chest X-ray may be enough based on the severity of the findings and age of the patient,

ii. A chest X-ray is taken. A lung CT is taken based on the respiratory findings in chest X-ray and if there are unexplained conditions or the patient is getting worse. **Medical Treatment**

- There are not enough scientific data for the treatment of children COVID-19 patients. Therefore, COVID-19 treatment recommendations for children should be based on adult studies and planned according to the conditions of the child patients. Rare severe clinical findings and death have been reported for children.
- Probable side effects should also be considered.
- Table 1 presents the medication dosages and treatment durations for children.
- Treatment should be planned separately for each child. Medication therapy can be administered for children with probable severe pneumonia and mild cases with risk factors (Table 2 and Table 3 present pneumonia severity findings).
- Hydroxychloroquine sulfate is not approved for use in children under 6 years. If it is to be used, “Informed Consent Form” must be filled.

Chest X-ray Findings

- Lung X-ray can be normal in early phases.
- However, in severe cases, unilateral or bilateral multifocal patchy ground glass opacities and accompanying consolidations may be observed.

Thorax CT findings

- Unilateral or bilateral patchy uptake or ground glass opacities are seen.
- There may be peripheral and subpleural uptake.
- Ground glass usually appears in the first days and may progress to consolidation in the following days.
- Lymphadenopathy is usually not seen and pleural effusion is rare.
- Generally, a normal thorax CT is helpful in excluding COVID-19.

Conditions to be aware of:

- Tachypnea (respiratory rate for babies younger than 2 months > 60/minute; babies between 2-12 months >50/minute; children aged between 1-4>40/minute and children older than 5>30/minute)
- Respiratory distress (contraction, cyanosis, restlessness, nasal flaring and tachypnea)
- Decrease in nutrition, dryness of the oral mucosa, decrease in the amount of urine
- Fever higher than 38.5 ° C or high fever that persists for 3-5 days
- Symptom onset after partial recovery **Children with risk factors**
- Underlying immune deficiencies or history of immunosuppressive medication intake
- Chronic diseases (diabetes, renal disorder, heart disease, chronic lung disease, hematologic diseases and metabolic disorders)

Table 6. Application Methods and Medication Doses to be used for Children

Medication Name	**Daily Dosage for Children and Way of Intake**	**Duration of the Treatment (day)**
First choice		
Hydroxychloroquine, 200 mg tablet ± Azithromycin 200 mg/5 ml suspension 500 mg tablet[1]	First day: 6.5 mg/kg/dose twice a day; Hydroxychloroquine sulfate: maximum dose on the first day: 400 mg/dose; on 2nd – 5th days: 3.25 mg/kg/dose twice a day Hydroxychloroquine sulfate maximum dose 200 mg Children between 1-5 months 10 mg/kg/dose (max dose: 500 mg/dose) 6 months and adolescents > 10 mg/kg single dose on the first day for children and adolescents (max: 500 mg/dose), then 5 mg/kg single dose for 2-5 days (max: 250 mg/dose) 5 days in total	5 days 5 days
In case of progression or alternative therapy		
Lopinavir 200 mg/ritonavir 50 mg tablet[2]	From 14 days to 6 months: lopinavir component 16 mg/kg PO BID 6 months to age of 18:	10-14 days
	15-25 kg: 200 mg-50 mg PO BID 26-35 kg: 300 mg-75 mg PO BID > 35 kg: 400 mg-100 mg PO BID	
Additional recommendations to the antiviral treatment for the confirmed COVID-19 patients who are in ICU and whose organs are deteriorating despite support therapies: Consult the ICU guidelines for patients who develop Macrophage Activation Syndrome (MAS) or hemophagocytosis.		

NOTE: Oseltamivir should be administered to patients whose influenza test is positive or who have influenzacompatible clinical findings, or when the influenza diagnosis cannot be excluded due to the season and other factors. Oseltamivir is not recommended for COVID-19 treatment.

Table 7. Pneumonia severity scoring according to age*

	Mild-Moderate	**Severe**

[1] Using both azithromycin and hydroxychloroquine may create a tendency for ventricular tachycardia by prolonging the Q-T interval. Therefore, azithromycin should not be used in patients with other clinical conditions that prolong the Q-T interval. In other cases, the patient should be monitored daily by ECG, azithromycin should be discontinued first in the patients with undesirable cardiotoxic effects, then the dose of hydroxychloroquine should be reduced first, and if the problem persists, hydroxychloroquine should be discontinued.

[2] The safety, efficiency and pharmacokinetic profile of lopinavir and ritonavirin for the newborns younger than 14 days. There is a risk to develop propylene glycol toxicity by using the oral solution of lopinavir/ritonavir in newborns younger than 14 days, especially in premature infants. The oral solution comprises of ethanol and propylene glycol inhibiting the ethanol propylene glycol metabolism competitively. The post-marketing reports include cardiotoxicity (complete AV block, bradycardia, cardiomyopathy), lactic acidosis, central nervous system depression, respiratory complications, acute kidney failure and death in premature infants following the use of the oral solution. The oral solution should not be used in the immediate postpartum period, including full term neonates less than 14 days postpartum or preterm newborns up to 14 days after birth, unless the baby is closely monitored, and the benefits clearly outweigh the risk. One dose per day (oral solution or tablets) is not an approved treatment for children below 18.

Nursling	Fever <38.5 °C Respiratory rate <50/min Mild chest contraction Can be fed orally	Fever <38.5 °C Respiratory rate>70/min Mild/moderate chest contraction Nasal flaring Cyanosis or hypoxia Intermittent apnea Whimpering Cannot be fed
Child	Fever <38.5 °C Respiratory rate <50/min Mild respiratory distress No vomiting	Fever <38.5 °C Respiratory rate >50/min Severe respiratory distress Nasal flaring Cyanosis or hypoxia Whimpering Dehydration

Table 8. Clinical Classification for Pneumonia

	Pneumonia	**Severe pneumonia**	**Very Severe Pneumonia**
State of consciousness	Normal	Tendency to sleep	Lethargic/confusion/unresponsive to painful stimuli
Whimpering	No	Could be	Yes
Color	Normal	Pale	Cyanotic
Respiratory rate	Tachypnea	Tachypnea	Tachypnea-apneic
Chest contraction	No	Yes	Yes
Nutrition	Normal	Decrease in oral intake	Cannot feed
Dehydration	No	Could be	Yes (Shock findings)

*Source: Report on Diagnosis and Treatment of Pneumonia in Children, Turkish Thorax Association

The medical waste of a probable/confirmed COVID-19 case must be disposed of according to the medical waste regulations.

If the healthcare professional who is dealing with a COVID-19 patient sees any signs or symptoms that suggest an acute illness within 14 days after the contact with the sick person, one should inform the related physicians and take necessary measures.

Terminating the Isolation for COVID-19 patients Hospitalized patients

Of the COVID-19 patients who are being monitored and treated as inpatients, the ones who do not have a fever and need for oxygen within the last 48-72 hours can be discharged by arranging the treatment if the attending physician deems it appropriate. The isolation at home can be terminated on the 14th day of the discharge if the patient does not have any fever or symptoms. The patient who has been sent home is managed according to "Patient Monitoring at Home" guide.

Patients Monitored at Home without Hospitalization Indications

The isolation of the patients monitored at home without hospitalization indications can be terminated on the 14th day, the earliest, following symptom recovery. The patient who has been sent home is managed according to "Patient Monitoring at Home" guide.

Terminating the isolation of healthcare professionals

Two negative tests sampled 24 hours apart, one taken following the 7 days from the symptom onset and the other one taken on the 3rd day, the earliest, following the symptom recovery, are needed to terminate the isolation of healthcare professionals with COVID-19. The professional can go back to work after two negative tests.

ASESSMENT OF HEALTHCARE PROFESSIONALS WHO CONTACTED COVID-19 PATIENTS

The available data show that COVID-19 transmits via close contact and droplets between humans. The people who have contact with a COVID-19 case or who take care of a case are at the highest risk to get the disease. Therefore, the healthcare professionals who take care of the patients are regarded as the group at the highest risk, and the protection of the healthcare professionals is a priority. This section explains how the healthcare professionals taking care of COVID-19 patients should be categorized according to the actions and measures they take during contact, and how should they be assessed.

Table 9. Assessing the contact of healthcare professional with a COVID-19 patient

	Use of PPE by the healthcare professional	**Contact risk**
Intense contact with a COVID-19 patient wearing a medical (surgical) mask	Did not use any PPE	Medium
	Did not use medical mask or N95 or used medical mask for a situation requiring N95	Medium
	Did not use goggles	Low
	Did not use gloves and coveralls	Low
	Used appropriate PPE	None
Intense contact with a COVID-19 patient who is not wearing a medical mask	Did not use any PPE	High
	Did not use a medical mask or N95	High
	Used a medical mask for a situation requiring N95	Medium
	Did not use goggles	Medium
	Did not use gloves and coveralls	Low
	Used appropriate PPE	None

Short discussions at triage, short entries to the patient room without contact, entering the room of a discharged patient are not considered as risky.

The healthcare professional who escorts the patient, who did not touch the patient and secretions and did not enter the patient room is not considered as at risk.

There is no contact risk for the healthcare workers who do not directly contact the patient, do not enter the rooms where the patients are actively cared for, and comply with routine safety measures.

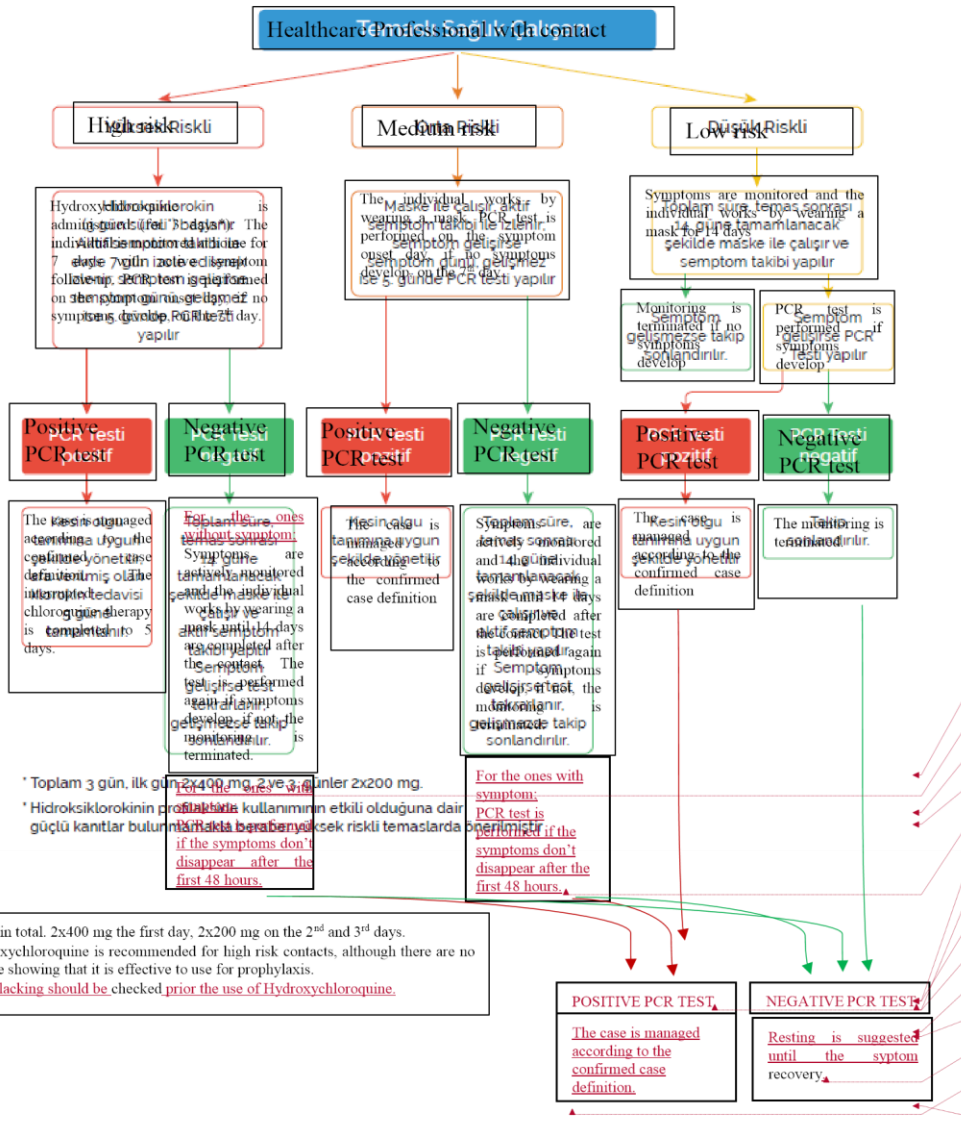
Any of the following is an intense contact with a COVID-19 patient:

- Respiratory sampling
- Intubation
- Aspiration of respiratory secretions
- Non-invasive ventilation
- High flow oxygen therapy
- Cardiopulmonary resuscitation
- Using nebulizer
- Endoscopic actions
- Bronchoscopy
- Videolaryngoscopy
- Anything with a dentist
- Mouth-throat-nose examination
- Ophthalmologic examination
- Central catheter insertion

Laboratory algorithm according to the risk categories for healthcare professionals with COVID-19 contacts

COVID-19

TEMASLI SAĞLIK ÇALIŞANI İÇİN RİSK KATEGORİLERİNE GÖRE UYGULANACAK LABORATUVAR ALGORİTMASI



* Toplam 3 gün, ilk gün 2x400 mg, 2.ve 3. günler 2x200 mg.

* Hidroksiklorokinin profilaktik kullanımının etkili olduğuna dair güçlü kanıtlar bulunmamakla beraber yüksek riskli temaslarda önerilmiştir.

✓

*3 days in total. 2x400 mg the first day, 2x200 mg on the 2nd and 3rd days.
* Hydroxychloroquine is recommended for high risk contacts, although there are no evidence showing that it is effective to use for prophylaxis.
*G6PD lacking should be checked prior the use of Hydroxychloroquine.

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A. Precautions and Measures to be taken for Morgue and Burial Services for probable/confirmed COVID-19 cases

- The morgue personnel and funeral manager should be informed about the probable/confirmed COVID-19 situation of the deceased, and the importance of hand hygiene.
- The mortuary personnel should be informed about the communicative disease of the deceased. The mortuary personnel should wear gloves, medical (surgical) masks, goggles/face protection and waterproof coveralls while washing the deceased.
- Pressurized water should not be used since it can cause the spread of the infected liquids and transmission of the disease with aerosols, during washing.
- The used PPE should be disposed of in the medical waste bins.
- The washing area should be disinfected by using 1/10 bleach or chlorine tablets (with a product suggestion).
- If the COVID-19 patient dies at home the burial processes should be conducted within the scope of abovementioned rules.
- The relatives of the deceased should not hug and be in close contact with the deceased.
- The deceased can be shrouded normally without a funeral bag.
- The deceased can be carried in a standard coffin.
- The deceased can be buried in a normal cemetery, not in a special one, and without requiring a measure such as lime sprinkling.
- Few people should join the funeral service, the social distancing measures should be followed.
- Only gloves are enough during the burial.
- There is not a need for disinfecting the deceased before and after the burial.
- The personal belongings of the deceased should be given in a double nylon bag. It should be stated that if the said items are going to be used again, the belongings should be washed at 60-90 degrees. The personal belongings are considered as medical waste, if they are to be thrown out.

B. Domestic and International Transport Rules of our Citizens who Died due to COVID-19

The deceased to be transported domestically and internationally via air, roads and railroads should be in a coffin, and should be buried in a coffin.

1- Funeral Transport by air

Standard funeral transport rules by air applies to our citizens who died due to COVID-19. According to the Cargo Services guide (Publication No: HAD / T-23) of the General Directorate of Civil Aviation and the "Funeral Transport Procedure" of Turkish Airlines “The coffins containing the deceased due to a communicable disease must be tightly closed and soldered to not to allow any leakage.” The coffins should comply with the rules since COVID-19 is a communicable disease.

2. **Funeral transport by roads and railroads**

The clause “The coffins containing the deceased due to a communicable disease must be tightly closed and soldered to not to allow any leakage” that is about the transport by air, also applies to the transport by roads and railroads.

C. Methods and Rules for the deceased for other reasons than being a probable or confirmed COVID-19 case

The burial services should proceed with the standard procedures for an individual who died due to other reasons than being a probable or a confirmed COVID-19 case. The physician doing the autopsy assess COVID-19 suspicion. It is important to take relevant measures for autopsy for all the deceased due to the COVID-19 outbreak.

Decisions of the High Council of Religious Affairs

Washing, shrouding and praying for the deceased are the primary duties of Muslims for the deceased. It is obligatory to perform the funeral prayer after washing and shrouding the deceased (Kasani, Bedai’, I, 300, 306 318; Mevsıli, el-İhtiyar, I, 303, 310). Others are released from these obligations if only few Muslims perform these duties. There is no specific time for the funeral prayer to be performed. It is essential to perform the funeral prayer for the deceased without making one wait (Tirmizi, Cenaiz, 30).

Funeral prayers should be performed with as few people as possible in case of a communicable disease. In addition, there should be enough distance between the people attending the funeral prayer due to the transmission risk. Although it is necessary to perform separate funeral prayers for each of the deceased, it is enough to perform one funeral prayer for everybody in this case.

The deceased should be washed, shrouded, and buried according to the funeral practice after the necessary precautions are taken according to the recommendations of the specialists due to the transmission risk. Burials with a coffin is also permissible depending on the needs. The authorized religious authorities should be consulted if there are any further questions about the funeral.

IV. HOW TO TRAVEL IN AFFECTED COUNTRIES

Travels to countries with high or increasing number of cases should be delayed if possible and if necessary, possible visitors should follow the instructions below:

- Travelers should avoid contact with ill people (keep at least 1 m distance).
- Travelers should not visit health institutions if possible, due to high number of ill people, and should minimize contact with other patients if necessary, to visit health institution.
- Travelers should regard recommendations on food safety (avoid consuming raw milk and animal products, wash thoroughly vegetables and fruits before eating raw). ✦ Travelers should avoid contact with wild animals and pets (live or dead).
- Travelers should regard hand hygiene and should clean their hands frequently. Hands should be washed thoroughly with water and soap for at least 20 seconds and alcoholbased hand antiseptics should be used if there is no soap and water. Antiseptic containing soaps are not necessary, regular soap will be enough.
- Travelers should cover their nose and mouth with a disposable paper tissue during coughing or sneezing or with their bent elbow when there is no paper tissue in order to minimize the infection of disease.
- Particularly in case of respiratory infection symptoms (fever, nasal flow, nasal congestion, sneezing, coughing, sore throat) the above instructions should be followed, hands should be washed frequently, sick people should not enter into crowded places if necessary, if it is necessary, mouth and nose should be covered and if possible, medical masks should be worn. People with no disease should not necessarily wear masks.

Travelers should apply to a health institution in case of fever, cough, respiratory distress within 14 days after travel and report their history of travel.

Table 10. Products* and specifications recommended for surface cleaning and disinfection[1]

Product*	Place of Use	Advantages	Disadvantages
Alcohol Solutions (Ethyl /isopropyl) (at least 70%) (Ethyl alcohol, Ethanol Cas No: 64-17-5) **	• Stethoscopes • Pulse oximeters • Defibrillatio n pads	• No toxicity • Low cost • Fast effect • No precipitations	• Not an ideal surface disinfectant since it is **volatile.** • Extremely combustible. • Hazardous for **plastic, rubber** and silicon materials. • Deactivated by **organic substances** (therefore, surfaces must be cleaned before use).
Standard Bleach * (1:10 normal dilution) (Sodium hypochlorite Cas No: 7681-52-9) ****	• Exterior surfaces • Blood contaminations	• Low cost • Fast effect • Easy to access • Ready for use tissues and sprays • Sporicidal and viricidal (against *C.difficile* and Norovirus)	• Hazardous to metal equipment • Deactivated by **organic substances** (therefore, surfaces must be cleaned before use). • Irritant to **skin and mucus** membranes**.** • Must be used within 24 hours after **diluted.** • Leaves stains on clothes.
Hydrogen Peroxide (0,5%) (Cas No: 7722-84-1)**	• Exterior surfaces of equipment • Floors • Walls	• Safe for the environment • Not toxic • Fast effect • Active in availability of organic substance • Tissue and fluid form available • Perfect cleaning with detergent feature	Hazardous **to copper, zinc, brass,** acrylic and aluminum**.**
Quaternary ammonium compounds (Quats)	• Floors • Walls	• Not toxic • Non corrosive • Good cleaning due to **detergent feature**	• Not to be used in disinfection of **medical devices.** • Limited use as a disinfectant due to **narrow microbial** spectrum**.**

*Adapted from Provincial Infectious Disease Advisory Committee's "Best Practices for Environmental Cleaning for Prevention and Control of Infections". * Products licensed with biocidal from the Ministry of Health should be used. These products may have different concentrations and, in some cases, may contain combined products and therefore, application must be used according to label instructions.*

[1] **See** the Guidance for Protection against Infectious Diseases in Emergency Healthcare Services Before Hospital

*** Cas No: Chemical registry number*

**** Products licensed with biocidal from the Ministry of Health may be of different concentrations and are used directly according to the label. There are different concentrations of bleaches used for cleaning purposes and those with reacting free chlorinity at 4-8% may be used by diluting 1/10.*

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