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**FIP HEALTH ADVISORY**

**CORONAVIRUS SARS-CoV-2/  
COVID-19 PANDEMIC:  
Information and interim guidelines  
for pharmacists and the pharmacy workforce**

**INTERNATIONAL PHARMACEUTICAL FEDERATION**

# Coronavirus SARS-CoV-2/COVID-19 pandemic: Information and interim guidance for pharmacists and the pharmacy workforce

*FIP will update this interim guidance as more information becomes available.*

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## Purpose of this document

Since December 2019, an outbreak of a new human coronavirus has spread to many countries and caused thousands of cases and deaths. COVID-19 is the disease caused by the new virus SARS-CoV-2. Most people who are infected get mild respiratory symptoms that will disappear on their own, but some people develop more severe illness, like pneumonia. The virus is transmitted through contact with an infected person or via respiratory droplets when an infected person coughs or sneezes. There is a higher risk of infection if you have been in an area where the virus is spreading, or if you have been in close contact with a person infected with the new coronavirus. There is also a higher risk if you suffer from comorbidities already.

The purpose of this document is to provide relevant information and guidelines on coronavirus outbreaks – and in particular the novel coronavirus SARS-CoV-2 and the diseases it produces, COVID-19 – for pharmacists and the pharmacy workforce, both in a primary care context (i.e. community pharmacies and primary healthcare facilities) and in hospital settings, as well as for pharmacists working as clinical biologists in medical analysis laboratories, for example, as clinical biologists, and offer a set of references that may be consulted for more information.

Coronavirus infections can be prevented and an outbreak can be stopped through the active engagement of decision-makers, healthcare professionals, the media and the community. This was demonstrated in previous coronavirus outbreaks such as in 2003 with SARS-CoV (Severe Acute Respiratory Syndrome Coronavirus) or in 2012 with MERS-CoV (Middle East Respiratory Syndrome Coronavirus). This document aims to assist pharmacists and the pharmacy workforce in preventing the spread of the disease and contributing to its efficient management in the healthcare system.

## Responsibilities and role of community pharmacy

Community pharmacies in outbreak-affected and unaffected areas are often the first point of contact with the health system for those with health-related concerns or simply in need of information and reliable advice.

Community pharmacists have the shared responsibility of:

- Storing and supplying appropriate stocks of pharmaceutical products and devices, such as medicines, masks, etc
- Informing and educating the public
- Counselling
- Referring
- Promoting disease prevention
- Promoting infection control

In addition to the COVID-19-related roles, pharmacies provide an essential public service to the whole population through the supply of medicines and pharmaceutical care. Ensuring the continuity of these services is essential.

In some countries or territories, such as [France](#) and [Portugal](#), pharmacists have been authorised to repeat dispensing of prescribed medicines for patients with long-term conditions, to reduce the need for medical appointments and release resources.

The American Pharmacists' Association has also [urged](#) health insurers and pharmaceutical benefit managers to immediately remove/waive any administrative barriers.

## Responsibilities and role of hospital pharmacy

Hospital pharmacies in outbreak-affected and unaffected areas play an important role in:

- Storing and supplying appropriate stocks of relevant medicines and other

- medical products and devices to supply the demand
- Collaborating with other healthcare professionals in providing patient care and support
- Promoting hospital prevention and infection control
- Informing and counselling
- Ensuring the responsible use of the pharmaceutical products supplied. For example, ensuring that healthcare professionals wear their masks appropriately and know how to take them off correctly to avoid contamination.
- Pharmacovigilance and monitoring treatment outcomes.

During the pandemic, in addition to community pharmacies and the COVID-19-related roles, hospital pharmacies provide an essential service to patients (both inpatients and outpatients) and health care teams through the supply of medicines and pharmaceutical care. Ensuring the continuity of these services is essential.

## Coronavirus outbreak

### What is a coronavirus?

Coronaviruses (CoVs) 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 \(SARS-CoV\)](#). [A novel coronavirus \(nCoV\)](#) is a new strain that has not been previously identified in humans.

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

Coronaviruses are large, enveloped, positive-stranded RNA viruses. They have the largest genome among all RNA viruses. The genome is packed inside a helical capsid formed by the nucleocapsid protein and further surrounded by an envelope. Associated with the viral envelope are at least three structural proteins: the membrane protein and the envelope protein are involved in virus assembly, whereas the spike protein mediates virus entry into host cells. Among the structural proteins, the spike forms large protrusions from the virus surface, giving coronaviruses the appearance of having crowns (hence their name; *corona* in Latin means crown). In addition to mediating virus entry, the spike is a critical determinant of viral host range and tissue tropism and a major inducer of host immune responses. (Li, 2016)

Coronaviruses usually affect mammals and birds, causing a variety of lethal diseases. In general, coronaviruses cause widespread respiratory, gastrointestinal and central nervous system diseases in humans and other animals, threatening human health and causing economic loss from mild upper to lower respiratory tract infections. (Li, 2016)

Coronaviruses are capable of adapting to new environments through mutation and recombination with relative ease. (Li, 2016) As such, they can affect new hosts and tissues.

For this reason, although rarely, certain coronaviruses that usually affect only certain animal species can generate new strains that can cross over to human hosts and then be transmitted between humans. Since humans had not been exposed to such viruses before and cannot be protected by either existing vaccines or natural immunity, these mutations can rapidly lead to disease outbreaks and, eventually, pandemics. This was the case with the previous outbreaks of SARS and MERS.

## What is the SARS-CoV-2 coronavirus / COVID-19 pandemic?

The SARS-CoV-2 is a novel strain of coronavirus that was first detected in the city of Wuhan, in the province of Hubei, in the People's Republic of China – a city with a population of 11 million. The outbreak started as a pneumonia of unknown causal agent at the end of December 2019.

Phylogenetics analyses undertaken with available full genome sequences suggest that bats appear to be the reservoir of COVID-19 virus, but the intermediate host(s) has not yet been identified. (World Health Organization, 2020)

On 30 January 2020, the World Health Organization (WHO) declared the outbreak a Public Health Emergency of International Concern. The WHO recommended that the interim name of the disease causing the current outbreak should be 2019-nCoV acute respiratory disease. In the 2019-nCoV acronym, "2019" is the year the virus was first detected, "n" means "new", and "CoV" corresponds to the coronavirus family.

On 11 February 2020, the International Committee on Taxonomy of Viruses (ICTV) decided to name the virus as **severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)**, and the WHO finally decided to name the disease caused by this virus as **COVID-19** (for **Coronavirus** disease identified in 2019).

Following large outbreaks of the disease in multiple countries, with thousands of deaths around the world, on 11 March 2020 the WHO declared the outbreak to be a pandemic.

For updated figures of the number of confirmed cases and deaths, as well as demographic and epidemiological data on the pandemic, you can consult the webpage <https://www.worldometers.info/coronavirus/> and/or the [webpage](#) developed by the [Center for Systems Science and Engineering at Johns Hopkins University](#).

The virus seems to have mutated already after its original transmission from the animal host or reservoir to humans, leading to at least two different strains. Population genetic analyses of 103 SARS-CoV-2 genomes indicated that these viruses evolved into two major types (designated L and S). Although the L type (~70%) is more prevalent than the S type (~30%), the S type was found to be the ancestral version. (Xiaolu Tang, 2020)

While both types play a part in the current outbreak, the higher prevalence of the L-type suggests that it is more aggressive. However, it is important to keep in mind that viruses mutate all the time and that not all mutations are indicative of increased disease severity or transmission rates. In fact, differences between the two types of the novel coronavirus are so small that researchers are reluctant to even classify them as separate strains. Given that multiple groups around the world are working on a vaccine, knowing the exact number of strains (or types) of the virus is crucial because, in order to be effective, the eventual vaccine will have to target features present in all known strains (or types). Luckily, many of the identified genetic differences are unlikely to affect the production of proteins, meaning there should not be significant changes to how the virus operates or the symptoms it causes. (Technology.org, 2020)

## How is SARS-CoV-2 coronavirus transmitted?

The transmission of SARS-CoV-2 occurs by the following mechanisms:

- a. Most often, spread from person to person among close contacts (about 6 feet/1.8 metres).
- b. Person-to-person spread is thought to occur mainly via respiratory droplets produced when an infected person coughs or sneezes, similar to how influenza and other respiratory pathogens spread.
- c. These droplets can land in the mouths, noses or eyes of people who are nearby or possibly be inhaled into the lungs.
- d. It may be possible that a person can get COVID-19 by touching a surface or

object that has the virus on it and then touching their own mouth, nose or possibly their eyes, but this is not thought to be the main way the virus spreads (Centers for Disease Control and Prevention, 2020). There is evidence that coronaviruses can remain infectious on inanimate surfaces for several hours or even days. (Kampf G, 2020). See also the section on “Cleaning and disinfection management”.

- e. Typically, with most respiratory viruses, people are thought to be most contagious when they are most symptomatic (the sickest). With COVID-19, however, there have been reports of spread from an asymptomatic infected patient to a close contact. (Centers for Disease Control and Prevention, 2020) (Rothe, 2020). Recent studies suggest that asymptomatic (or pre-symptomatic) patients may indeed be driving the rapid expansion of the disease (Ruiyun Li, 2020).
- f. Also, patients may remain contagious up to two weeks after the remission of symptoms. According to Wölfel and collaborators, whereas symptoms mostly waned by the end of the first week, viral RNA remained detectable in throat swabs well into the second week. Stool and sputum samples remained RNA-positive over even longer periods, in spite of full resolution of symptoms. (Roman Wölfel, 2020)
- g. Minimal information is available regarding COVID-19 during pregnancy. Intrauterine or perinatal transmission has not been identified. In two reports including a total of 18 pregnant women with suspected or confirmed COVID-19 pneumonia, there was no laboratory evidence of transmission of the virus to the neonate. However, two neonatal cases of infection have been documented. In one case, the diagnosis was made at day 17 of life after close contact with the infant's mother and a maternity matron who were both infected with the virus. The other case was diagnosed 36 hours after birth; the source and time of transmission in that case were unclear. (McIntosh, Coronavirus disease 2019 (COVID-19) - Special situation: Pregnant women, 2020) Much of the advice in various countries, such as UK, about pregnant women moving to socially isolate is preventive rather than based on evidence of increased risk of harm.
- h. In limited studies on women with COVID-19 and another coronavirus infection, Severe Acute Respiratory Syndrome (SARS-CoV), the virus has not been detected in breast milk; however it is not known whether mothers with COVID-19 can transmit the virus via breast milk. Breast milk provides protection against many illnesses.
- i. There are rare exceptions when breastfeeding or feeding expressed breast milk is not recommended. The CDC has no specific guidance for breastfeeding during infection with similar viruses like SARS-CoV or Middle Eastern Respiratory Syndrome (MERS-CoV) also both coronaviruses. In a similar situation to COVID-19, the CDC recommends that a mother with flu continue breastfeeding or feeding expressed breast milk to her infant while taking precautions to avoid spreading the virus to her infant. Given low rates of transmission of respiratory viruses through breast milk, the World Health Organization presently states that mothers with COVID-19 can breastfeed. (Academy of Breastfeeding Medicine, 2020)

## Coronavirus Disease 2019 (COVID-19) – clinical information

### Onset

The SARS-CoV-2 has an incubation period of 2 to 14 days before the onset of symptoms.

A study led by researchers at Johns Hopkins Bloomberg School of Public Health yielded an estimate of 5.1 days for the median disease incubation period. This median time from exposure to onset of symptoms suggests that the 14-day quarantine period recommended by the WHO and other organisations is reasonable.

The analysis suggests that about 97.5% of people who develop symptoms of SARS-CoV-2 infection will do so within 11.5 days of exposure. The researchers estimated that for every 10,000 individuals quarantined for 14 days, only about 101 would develop symptoms after being released from quarantine. (Lauer SA, 2020)

## Symptoms

For confirmed COVID-19 cases, reported illnesses have ranged from people with little to no symptoms to people being severely ill and dying. Symptoms can include (on admission to hospital) (Nanshan Chen, 2020):

- Fever (>80% of the patients)
- Cough (>80%)
- Shortness of breath (31%)
- Muscle ache (11%)

The disease may also occur with mild symptoms only, including: low-grade fever, cough, malaise, rhinorrhoea, sore throat without any warning signs, such as shortness of breath or difficulty in breathing, increased respiratory secretions (i.e. sputum or haemoptysis), gastrointestinal symptoms such as nausea, vomiting, and/or diarrhoea and without changes in mental status (i.e. confusion, lethargy). (World Health Organization, 2020)

Preliminary data report 11% lethality among hospitalised patients. Complications occurred in 33% of the patients, and included: acute respiratory distress syndrome (ARDS) (17%), acute renal injury, acute respiratory injury, septic shock and ventilator-associated pneumonia. (Nanshan Chen, 2020)

Risk factors for severe illness are not yet clear, although older patients or patients with underlying medical comorbidities (diabetes, hypertension, cardiovascular disease, cancer) may be at higher risk. In the most severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death. (World Health Organization, 2020)

Disease in children appears to be relatively rare and mild with approximately 2.4% of the total reported cases reported among individuals aged under 19 years. A very small proportion of those aged under 19 years have developed severe (2.5%) or critical disease (0.2%).(World Health Organization, 2020)

## Treatment

### 1. Clinical treatment medicines

Currently, there is no specific medicine or vaccine for COVID-19 and no medicines or vaccines have been fully tested for safety and efficacy.

At present, antiviral therapy is mainly used, as well as symptomatic and supportive treatment based on the clinical condition of the patient. Supportive treatments include oxygen therapy, hydration, fever/pain control, and antibiotics in the presence of bacterial co-infection.

According to the diagnosis and treatment plan recommended by the Chinese health authorities, the antiviral drugs that can be tested for treatment mainly include  $\alpha$ -Interferon (aerosol inhalation therapy), lopinavir/ritonavir, ribavirin, chloroquine phosphate, umifenovir and others. Authorities suggested further evaluation of the efficacy of the currently recommended trial drugs in clinical applications.

With regards to immunotherapy, for patients with extensive lung disease and severe disease, and laboratory testing of elevated IL-6 levels, tocilizumab can be tried. It is not recommended to use three or more antiviral drugs at the same time. And relevant diagnosis and treatment guidelines emphasize the avoidance of blind or unreasonable



application of antibacterial drugs or glucocorticoids. (National Health Commission of the People's Republic of China, 2020)

In the report of the first case of COVID-19 patients in the United States published in NEJM, the patient's symptoms improved significantly after receiving Remdesivir. (Michelle L. Holshue, 2020)

In a study by the Professor Li Lan-juan's team, the antiviral effects of the triple combination (umifenovir + recombinant interferon  $\alpha$ -2b + lopinavir/ritonavir) and the dual combination (recombinant interferon  $\alpha$ -2b + lopinavir/ritonavir) were compared. The results of the study showed that the triple combination including umifenovir can significantly shorten the negative nucleic acid time of respiratory virus and the average hospitalization time. (Wei Runan, 2020)

Also, Professor Li Lan-juan and XU Kai-jun's team evaluated the effect of low and medium doses of glucocorticoids on virus clearance. The results of the study showed that low and medium doses of glucocorticoids did not significantly shorten the median time to negative nucleic acid conversion of respiratory virus and median time to improve lung imaging. No significant benefit was observed when classification was limited to patients with COVID-19. (Ni Qin, 2020)

In summary, most of the currently published related studies focus on the COVID-19 epidemiological investigation or clinical characteristics analysis. There are still few studies to evaluate the effectiveness / safety of drugs, and the related studies are still in the clinical research stage. When using the above-mentioned possible drugs to treat COVID-19, it is necessary to carefully formulate the dosing regimen and closely monitor the safety and effectiveness of the medicine to avoid adverse drug reactions or drug interactions.

For mild cases in the community, patients are advised to stay home in isolation, except for patients who may be at higher risk of developing severe forms of the disease, including older adults (>65 years old in some countries, >70 in others), people with underlying conditions (such as cardiovascular diseases, diabetes, respiratory diseases such as COPD, or cancer) and patients with compromised immunity (congenital or acquired).

The management of symptoms may involve the use of antipyretics and/or anti-inflammatory medicines for fever and mild pain. The safety of the use of ibuprofen in COVID-19 patients has been questioned by an opinion article published by The Lancet suggesting that patients being treated with medicines that increase the expression of angiotensin converting enzyme 2 (ACE2) may be at increased risk of infection and/or severe COVID-19 disease. (Lei Fang, 2020) ACE2 has been proven to mediate cell entry by SARS-CoV-2 in another paper (Markus Hoffmann, 2020). However, the evidence against the use of ibuprofen in COVID-19 patients is not robust enough to rule it out. In overall clinical practice, ibuprofen has well-established effectiveness in controlling the symptoms it is indicated for, both in mild and severe infectious disease. There is currently no conclusive evidence to establish a direct association between the use of non-steroidal anti-inflammatory medications (including ibuprofen) and increased risk of infection or severity of disease. (European Medicines Agency, 2020) Nevertheless, other medicines such as paracetamol /acetaminophen may be considered for the management of fever in COVID-19 patients if appropriate.

Likewise, there is no evidence to support the assertion and that treatment with ACE inhibitors (ACEi) or angiotensin receptor blockers (ARB) could predispose individuals to adverse outcomes should they become infected with COVID-19. Various scientific and professional societies have stated that patients should continue treatment with ACEi and ARB unless specifically advised to stop by their medical team. (British Cardiovascular Society and British Society for Heart Failure, 2020)

Corticosteroids are not routinely recommended for viral pneumonia or acute respiratory distress syndrome (ARDS) and should be avoided because of the potential for prolonging viral replication as observed in MERS-CoV patients, unless indicated for other reasons (e.g., COPD exacerbation, refractory septic shock following Surviving Sepsis Campaign Guidelines). (Centers for Disease Control and Prevention, 2020) (Russell CD, 2020)

For a rationale for different treatment options, as well as guidance for the treatment of special populations (pregnant patients, newborns, children and young people) and nutritional support, see the guidance document (in English or Chinese) prepared by the Chinese Pharmaceutical Association, also available from the [dedicated FIP webpage](#). (Chinese Pharmaceutical Association, 2020)

Further country-level information from countries in Europe is available on the European Association of Hospital Pharmacists [website](#).

## **2. Convalescent plasma therapy**

For COVID-19 patients with rapid disease progression, severe and critical illness, convalescent plasma therapy (CPT) can be tried (National Health Commission of the People's Republic of China, 2020). CPT utilises a certain titre of virus-specific antibodies in the plasma of the convalescent individual to enable the patient receiving the infusion to obtain passive immunity and remove pathogens from the blood circulation. This method has been successfully used in the treatment of SARS and H1N1 influenza, and is an effective treatment (Chen L, 2020).

The use of CPT treatment can follow the following principles (National Health Commission of the People's Republic of China, 2020):

1. In principle, the course of disease does not exceed three weeks. Also, the patient should have a positive viral nucleic acid test or viraemia certified by clinical experts.
2. Patients with severe disease with rapid disease progression, or critically ill early stage patients, or patients comprehensively evaluated by clinical experts as requiring plasma therapy. The infusion dose is determined according to the clinical situation and the weight of the patient, usually the infusion dose is 200-500 ml (4-5 ml/kg).

Before, during, and after the infusion, detailed records and clinical observation should be made to assess the adverse effects of plasma infusion. The main types of adverse transfusion reactions include transfusion-related circulation overload, transfusion-related acute lung injury, transfusion-related dyspnoea, allergic reactions, transfusion-associated hypotension reactions, non-haemolytic febrile reactions, acute haemolytic transfusion reactions, and delayed haemolytic transfusion reaction, infectious transfusion reaction, other/unknown, etc.

## **3. Advances in vaccines development for the treatment of COVID-19**

Since the vaccine development process involves procedures such as virus strain isolation and selection, in vitro experiments, animal experiments, clinical trials, and administrative approvals, it takes a long time. At present, some recognition sites for SARS-CoV-2 have been found and can be used for vaccine development (Ahmed SF, 2020) (Ramaiah A, 2020).

The Ministry of Science and Technology of the People's Republic of China has organised national key units to carry out joint research, and arranged five technical routes in parallel, including inactivated vaccines, recombinant genetically engineered vaccines, adenovirus vector vaccines, nucleic acid vaccines (mRNA vaccine and DNA vaccine), and vaccines made from attenuated influenza viral vaccine vectors.

Some vaccines have entered the research stage for safety and effectiveness in experimental animals. It is expected that by April 2020, according to the relevant national laws and regulations, some vaccines will enter clinical research or emergency use. (Sun C, 2020)

#### 4. Progress of clinical trials for the treatment of COVID-19

At present, clinical research projects on new coronavirus pneumonia drugs are ongoing. As of 9 am on 8 March 2020, a total of 436 clinical trials were retrieved from the Chinese Clinical Trials Registry, and a total of 181 clinical trials involving drug treatment were screened out, of which 107 were randomised controlled trials, four were real-world studies, and 70 were non-randomised controlled trials.

Of the 181 studies, 176 were initiated by Chinese research institutions, mainly distributed in Hubei (43), Shanghai (25), Beijing (20), Zhejiang (20) and Guangdong (19). The remaining five studies were initiated by other countries.

The drugs involved in clinical trials mainly include traditional Chinese medicine (TCM) interventions (64 items), antiviral drugs (40 items), immunotherapy drugs (28 items, such as Interferon, Thymosin, Immunoglobulin, PD1 inhibitors, etc.), anti-malaria drugs (21 items, such as chloroquine, hydroxychloroquine, chloroquine phosphate), glucocorticoids (6 items), and other drugs (22 items, such as vitamin C, vitamin D, polymyocyte injection, zinc sulphate, acetylcysteine, etc.).

The most clinical trials of antiviral medicines are anti-HIV medicines (14 items, such as lopinavir/ritonavir, darunavir/cobistat, azidovudine), followed by anti-influenza viruses medicines (13, such as umifenovir, fapilavir), and five clinical trials of remdesivir, which are considered to have potential efficacy against COVID-19.

### Ensuring stock and access to key medicines, equipment and facilities

Aiming at the prevention and disease control of COVID-19, pharmacies should guarantee the supply of medicines, including those used for disease prevention, diagnosis and treatment, as well as for supplying medical support teams.

Pharmacies should designate a pharmacist to take charge of the procurement, storage and distribution of key medicines, and to adjust the inventory as needed to guarantee the supply for clinical practice.

The list includes antiviral medicines, antimicrobial agents, antipyretics and analgesics, corticosteroids and several other categories of medicines.

See the table developed by the Chinese Pharmaceutical Association in [Annex 1](#). For a list of key facilities, equipment and personal protective equipment, also developed by the Chinese Pharmaceutical Association, see [Annex 2](#).

In situations of home confinement of patients or persons under quarantine, pharmacies can play an important role in ensuring access to medicines through home deliveries, not only for the treatment of COVID-19 but also of other conditions, such as long-term non-communicable diseases.

### Prevention

To help control further spread of the virus, people who are suspected or confirmed to have the disease should be isolated from other patients and treated by health workers using strict infection control precautions.

People who have had social contact with symptomatic individuals with confirmed COVID-19 should be followed up as a contact through the local healthcare teams.

The WHO's standard recommendations for the general public to reduce exposure to and transmission of this and other respiratory illnesses are as follows, which include hand and respiratory hygiene, and safe food practices:

1. Frequently clean hands by using alcohol-based hand rub or soap and water;
2. When coughing and sneezing cover the mouth and nose with a flexed elbow or tissue – throw the tissue away immediately and wash hands;
3. Avoid close contact with anyone who has fever and cough;
4. If you have fever, cough and difficulty breathing seek medical care early and share previous travel history with your healthcare provider;
5. When visiting live markets in areas currently experiencing cases of novel coronavirus, avoid direct unprotected contact with live animals and surfaces in contact with animals;
6. The consumption of raw or undercooked animal products should be avoided. Raw meat, milk or animal organs should be handled with care, to avoid cross-contamination with uncooked foods, as per good food safety practices. (World Health Organization, 2020)

**Self-isolation by persons with symptoms and/or persons who may have been in contact with infected persons**

Self-isolation means avoiding situations where you could infect other people. This means all situations where you may come in contact with others, such as social gatherings, workplaces, schools, child care/pre-school centres, universities, faith-based gatherings, aged care and health care facilities, prisons, sports gatherings, supermarkets, restaurants, shopping malls, and all public gatherings. (Ministry of Health of New Zealand, 2020)

## Pharmacy activities

### Pharmacy operations and facilities: ensuring safety and continuity of service

**Professional oversight/managing pharmacist**

In case the managing pharmacist cannot assure his/her presence and role at the pharmacy, these can be taken up by a second pharmacist who may or not belong to the pharmacy's personnel. This "second" pharmacist should take up the responsibility for the supervision of all activities of the pharmacy and all the personnel.

**Opening hours**

In case a pharmacy cannot assure its normal opening hours due to non-availability of staff because of COVID-19, the new opening hours should be communicated to the public in a visible place at least outside the pharmacy. The new opening times need to assure minimal service to the community in terms of medicines supply.

**Patient/customer service**

In order to assure the continuity of the supply of medicines and services to communities where there is only one pharmacy in a certain radius (which may vary from country to country), contact with patients/customers should be minimised by dispensing medicines through a small window on the façade or door, like those often used for night services.

A plastic shield can also be put in front of the dispensing area, or marks placed on the ground to indicate the circa 2m distance between customers and staff. In case neither of these measures is possible, patients/customers should not enter the pharmacy and pharmacists are advised to use appropriate individual protective equipment, where needed.

Pharmacies in general are also advised to dispense medicines through this window whenever this may be necessary to minimise contact while ensuring continuity of service.

In order to avoid concentration of people inside the pharmacy, patients and customers

should be asked to wait their turn outside the pharmacy. In any case, patients/customers should keep a distance of 1–2 metres between them while waiting in the queue.

### **Medicines supply**

When appropriate, the supply of medicines to pharmacies should be done without anyone external to the pharmacy staff entering the pharmacy (or at least the non-public areas of the pharmacy). Additionally, the cases used by wholesale distributors for the delivery of medicines should be cleaned and disinfected before they are taken inside the pharmacy facilities.

### **Medicines home delivery**

In order to ensure the appropriate supply of medicines to patients and the public, and especially in small towns where other pharmacies may have closed, open pharmacies may organise the home delivery of medicines. Pharmacies that are able to offer this service are encouraged to do so, especially for patients who may be in home quarantine or isolation, or who may belong to a higher risk group or have reduced mobility.

In the case of home delivery, the person in charge of the actual delivery should avoid any direct contact with the patient and their personal objects. Medicines and other items can be left outside the door of the patient/customer or in another designated place, and the deliverer should move to keep a safe distance of 1–2 metres while visually ensuring that medicines are collected by the patient or an authorised person.

The Italian Federation of Community Pharmacy Owners (FEDERFARMA) established a partnership with the Italian Red Cross for a free delivery service 24 hours a day for patients older than 65 or in quarantine or home confinement. (Federfarma, 2020)

When appropriate and possible, community pharmacies may collaborate with hospitals in delivering necessary medicines. (INFARMED - Autoridade Nacional do Medicamento e Produtos de Saúde, 2020)

### **Attending area**

1. Access to products on self-selection by customers should be restricted to avoid multiple people touching these products. They should be accessed only by pharmacy personnel.

### **Notice to patients /customers**

Place a notice at the entrance of the pharmacy with the main recommendations that patients/customers must adopt before entering, such as:

1. Disinfect your hands when entering the pharmacy;
2. Make sure you keep a distance of 1–2 metres between you and other customers and anyone on the pharmacy staff;
3. Do not walk outside the floor markings, if any;
4. If you sneeze or cough, cover your nose and mouth with a handkerchief (which you should discard in a suitable container and not reuse it) or with a flexed elbow;
5. Avoid shaking hands and close contacts while in the pharmacy;
6. Prepare in advance the prescriptions you need to fill.

### **At the counter**

1. Whenever possible, allocate one employee per station or location at the counter and avoid swaps.
2. Keep at the counter only essential objects.
3. Wipe and disinfect the counter after each customer/patient.
4. Have an alcohol-based solution at hand, to disinfect hands after attending to each patient/customer.
5. Where possible, encourage patients to order their medicines through the pharmacy's webpage (depending on the jurisdiction) and delivered to their

home or work place.

### ***Social distancing***

1. Limit the number of patients/customers entering the pharmacy at any one time.
2. Establish a safe distance of at least 1 metre (preferably more) when attending to a patient.
3. If necessary, a tray may be used to collect prescriptions, hand over medicines and process the payment in order to overcome this distance.
4. Advise patients to keep a safe distance of at least 1 metre between them while waiting, and use marking tape on the floor to indicate where they may stand;

### ***Advise patients /customers to:***

1. Avoid long stays in the pharmacy.
2. Avoid visiting the pharmacy if they are elderly or have co-morbidities. Whenever possible, such patients should ask a family member, a friend or a neighbour to go to the pharmacy instead of them. (Associação Nacional das Farmácias de Portugal, 2020)

### ***Recommendations for pharmaceutical services and activities in the pharmacy***

1. Point-of-care tests (measurement of blood pressure, cholesterol, glycaemia), pregnancy tests, or the administration of vaccines and injectables (wherever authorised), and any other services that require direct contact with a patient should follow additional protective measures, such as the use of a mask and gloves.
2. The services referred to in the previous point may need to be restricted or interrupted if they could represent a risk to the health of the team (e.g., for patients with symptoms of respiratory infection).

### ***Recommendations for the pharmacy team***

1. To ensure continuity of pharmacy activities, it is recommended to divide the team in shifts (for example, one in the morning and one in the afternoon), with the possible closure of the pharmacy between them, to disinfect the entire pharmacy, ensuring that the members of each shift do not cross each other.
2. Employees with diseases that compromise their immune system should use masks and preferably perform back office tasks. Hand hygiene measures should be reinforced.
3. Employees should change coats more often.
4. The wearing of accessories such as bracelets, watches and rings should be avoided.
5. Whenever it is necessary to put on a mask, hygiene and disinfection of the hands should be performed before and after.

## **Preventive measures**

Pharmacists and the pharmacy workforce can play a key role in preventing the spread of coronavirus SARS-CoV-2 by:

- Understanding the nature of the disease, how it is transmitted, and how to prevent it from spreading further;
- Knowing how to access their national level information sources regarding the COVID-19 strategies (including the closest referral centre for COVID-19), and by maintaining currency in that information;
- Informing, advising and educating the community;
- Supplying appropriate products;
- Encouraging individuals and families with suspected cases of COVID-19 to either self-isolate in home confinement if symptoms are mild and the affected patients do not belong to the higher-risk groups, (over 65 years of age, underlying cardiovascular or respiratory conditions, diabetes, cancer or other congenital or acquired conditions that may compromise the immune response).

Patients belonging to such groups should be referred to an appropriate healthcare facilities for a screening test and appropriate follow-up.

Primary care centres, pharmacies or other healthcare facilities (including those of traditional medicine) that do not have such an environment and equipment may play a key role in the prevention of the disease but they are not the appropriate facilities to treat or manage COVID-19 patients.

Endeavouring to treat patients in inadequate environments may put healthcare professionals and others at risk, which they should seek to mitigate.

In addition, the following measures should be considered by the pharmacy management (Chinese Pharmaceutical Association, 2020):

1. Develop emergency plans and workflow
2. Carry out full staff training
3. Focus on the health status of pharmacists
4. Protect pharmacy personnel
5. Strengthen pharmacists' infection monitoring
6. Ensure adequate cleaning and disinfection management
7. Strengthen patient management
8. Strengthen patient education
9. Strengthen infection exposure management
10. Strengthen medical waste management

Detailed guidance on each point is provided by the Chinese Pharmaceutical Association in the appropriate document that can be found on the [FIP dedicated webpage](#).

#### **Use of masks**

Wearing a medical mask is one of the prevention measures to limit spread of certain respiratory diseases, including COVID-19, in affected areas. However, **the use of a mask alone is insufficient to provide an adequate level of protection** and other equally relevant measures should be adopted.

If worn properly, a facemask helps block respiratory secretions produced by the wearer from contaminating other persons and surfaces (often called source control). (Centers for Disease Control and Prevention, 2020). If masks are to be used, this measure must be combined with hand hygiene and other infection and prevention control measures to prevent the human-to- human transmission of COVID-19.

The WHO recommends that health care workers should:

- Wear a medical mask when entering a room where patients suspected or confirmed of being infected with COVID-19 are admitted and in any situation of care provided to a suspected or confirmed case;
- Use a particulate respirator at least as protective as a US National Institute for Occupational Safety and Health (NIOSH)-certified N95, European Union (EU) standard FFP2, or equivalent, when performing aerosol- generating procedures such as tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation and bronchoscopy. (World Health Organization, 2020)

The USA Centers for Disease Control and Prevention (CDCs) have issued guidance on the three key factors for a respirator to be effective:

1. The respirator must be put on correctly and worn during the exposure.
2. The respirator must fit snugly against the user's face to ensure that there are no gaps between the user's skin and respirator seal.
3. The respirator filter must capture more than 95% of the particles from the air that passes through it. (Centers for Disease Control and Prevention, 2020)

For guidance on the correct (and incorrect) use of respirators, see the cited [CDC brochure](#).

#### **When to use a mask**

- If you are healthy, you only need to wear a mask if you are taking care of a person with suspected COVID-19 infection.
- Wear a mask if you are coughing or sneezing.
- Masks are effective only when used in combination with frequent hand-cleaning with alcohol-based hand rub or soap and water.
- If you wear a mask, then you must know how to use it and dispose of it properly. (World Health Organization, 2020)

#### **How to put on, use, take off and dispose of a mask**

1. Remember, a mask should be used by health workers, care givers, and individuals with respiratory symptoms, such as fever and cough.
2. Before touching the mask, clean hands with an alcohol-based hand rub or soap and water
3. Take the mask and inspect it for tears and holes.
4. Orient which side is the top side (where the metal strip is).
5. Ensure the proper side of the mask faces outwards (the coloured side).
6. Place the mask to your face. Pinch the metal strip or stiff edge of the mask so it moulds to the shape of your nose.
7. Pull down the mask's bottom so it covers your mouth and chin.
8. After use, take off the mask; remove the elastic loops from behind the ears while keeping the mask away from your face and clothes, to avoid touching potentially contaminated surfaces of the mask.
9. Discard the mask in a closed bin immediately after use.
10. Perform hand hygiene after touching or discarding the mask. Use alcohol-based hand rub or, if they are visibly soiled, wash your hands with soap and water (World Health Organization, 2020)



**Medical masks** can be used to prevent the spread of respiratory infections.

There are 2 main types of medical masks: **face masks** and **N95 respirators**.



**Face masks** fit more loosely and prevent the wearer from spreading large sprays and droplets when coughing or sneezing.

**N95 respirators** fit more tightly and prevent the wearer from inhaling smaller, airborne infectious particles. **N95 respirators are not recommended for use by the general public.**

### Face masks should only be used by

- ✓ Individuals with symptoms of respiratory infection such as coughing, sneezing, and sometimes fever
- ✓ Health care workers
- ✓ Persons taking care of or in close contact with someone with a respiratory infection

### How do I use a face mask?

- 1 Wash hands for at least 20 seconds prior to putting on a face mask.
- 2 Place face mask over nose and mouth. Ensure a tight seal with no gaps and secure elastics or straps.



- 3 Avoid touching the front of the face mask. If you do, wash hands for at least 20 seconds.
- 4 Remove the face mask without touching the front. Discard in a closed bin.
- 5 Wash hands again for at least 20 seconds.



Image credits: Angel N. Desai, and Preeti Mehrotra. JAMA, 2020-03-04. doi:10.1001/jama.2020.2331

## Respiratory protection (personal protective equipment)

- Use respiratory protection (i.e., a respirator) that is at least as protective as a fit-tested NIOSH-certified disposable N95 filtering face piece respirator before entry into the patient room or care area.
- Disposable respirators should be removed and discarded after exiting the patient's room or care area and closing the door. Perform hand hygiene after discarding the respirator.
- If reusable respirators (e.g., powered air purifying respirator/PAPR) are used, they must be cleaned and disinfected according to manufacturer's reprocessing instructions prior to re-use.
- Respirator use must be in the context of a complete respiratory protection programme in accordance with Occupational Safety and Health Administration (OSHA) Respiratory Protection standards. Staff should be medically cleared and fit-tested if using respirators with tight-fitting face pieces (e.g., a NIOSH-certified disposable N95) and trained in the proper use of respirators, safe removal and disposal, and medical contraindications to respirator use.

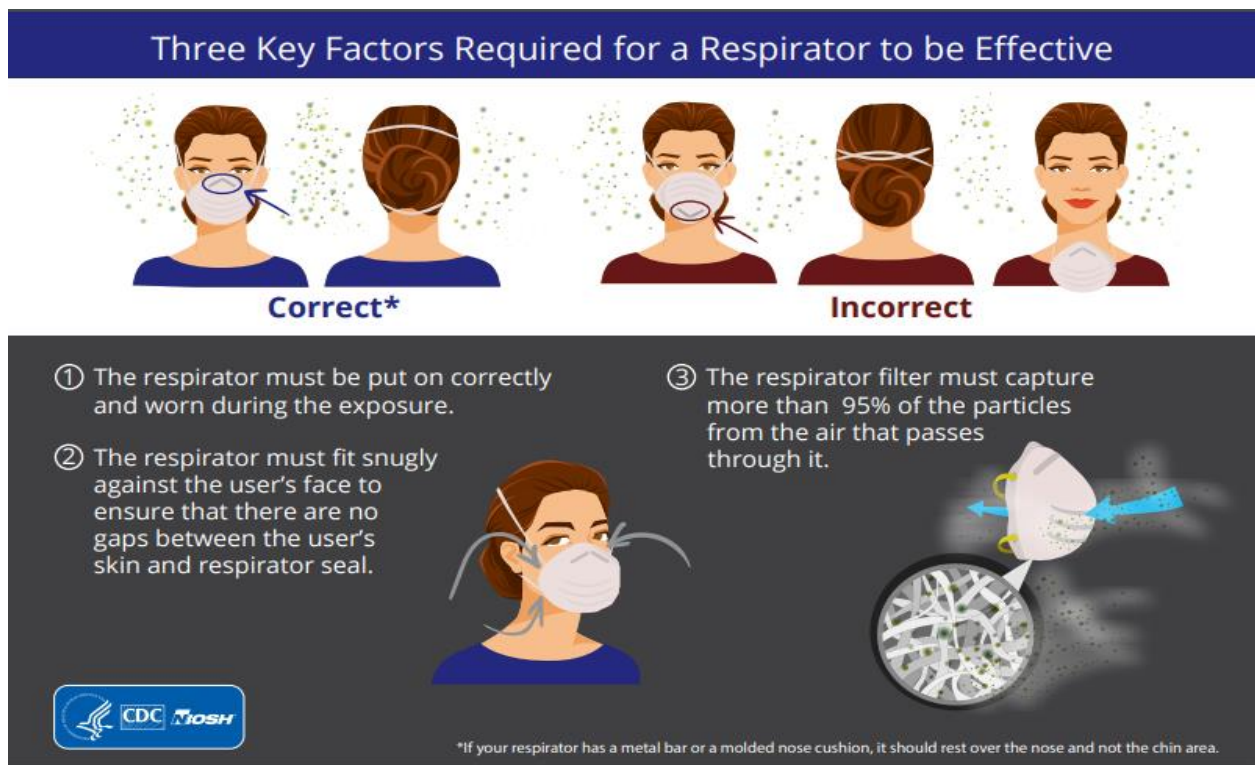


Image credits: Ronald Shaffer, PhD; Jaclyn Krahn Cichowicz, MA; Ginger Chew, ScD; and LCDR Joy Hsu, MD, MS. CDCs, 2018. <https://blogs.cdc.gov/niosh-science-blog/2018/01/04/respirators-public-use/>

## Advice to the community

*Individuals without respiratory symptoms should:*

1. Avoid large gatherings and closed crowded spaces;
2. Maintain a distance of at least 1 metre from any individual with COVID-19 respiratory symptoms (e.g., coughing, sneezing);
3. Perform hand hygiene frequently, using alcohol-based hand rub if hands are not visibly soiled or soap and water when hands are visibly soiled;
4. If coughing or sneezing cover the nose and mouth with a flexed elbow or paper tissue, dispose of the tissue immediately after use and perform hand hygiene;

5. Refrain from touching the mouth, nose and eyes before washing their hands;
6. Avoid visiting elderly people in their homes or at nursing homes, as they are particularly vulnerable to COVID-19.

A medical mask is not required, as no evidence is available on its usefulness to protect non-sick persons. However, masks might be worn in some countries according to local cultural habits. If masks are used, best practices should be followed on how to wear, remove, and dispose of them and on hand hygiene action after removal (see below advice regarding appropriate mask management).

*Individuals with respiratory symptoms should:*

1. Wear a medical mask and seek medical care if experiencing fever, cough and difficulty breathing, as soon as possible or in accordance with local protocols;
2. Follow the advice below regarding appropriate mask management.

Wearing medical masks when not indicated may cause unnecessary cost, add to the procurement burden and create a false sense of security that can lead to neglecting other essential measures such as hand hygiene practices. Furthermore, using a mask incorrectly may hamper its effectiveness to reduce the risk of transmission. (World Health Organization, 2020)

[Additional guidance can be found in the CDC's \*Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 \(COVID-19\) in Healthcare Settings\*. \(Centers for Disease Control and Prevention, 2020\)](#)

## Recommendation for outpatient care

The basic principles of infection prevention and control and standard precautions should be applied in all health care facilities, including outpatient care and primary care. For COVID-19, the following measures should be adopted:

- Triage and early recognition;
- Emphasis on hand hygiene, respiratory hygiene and medical masks to be used by patients with respiratory symptoms;
- Appropriate use of contact and droplet precautions for all suspected cases;
- Prioritisation of care of symptomatic patients;
- When symptomatic patients are required to wait, ensure they have a separate waiting area;
- Educate patients and families about the early recognition of symptoms, basic precautions to be used and which health care facility they should refer to. (World Health Organization, 2020)

## Community pharmacy interventions and patient counselling

Due to their accessibility and wide geographical distribution in most countries, community pharmacies are often the first point of contact of the public with the health care system – and this includes situations of disease outbreaks and pandemics. Therefore, pharmacies have a pivotal role to play not only in ensuring access to medicines and medical devices, but also in public health, namely by informing the public about preventative measures, advising about behavioural changes and in the risk assessment, early detection and referral of individuals at a higher risk of being infected.

It is important that pharmacists offer reassurance to the public in general, so that people can protect themselves and others based on sound scientific evidence and rational behaviours, and are not driven by panic.

In all cases, it is paramount that pharmacists and the pharmacy workforce protect themselves from infection by keeping a safe distance from patients and members of the

public and frequently disinfecting any surfaces that may be touched by them.

Since infection can occur from asymptomatic or pre-symptomatic individuals (Ruiyun Li, 2020), precaution is recommended with ALL customers and patients entering the pharmacy.

Based on the assessment of an individual's symptoms and recent history of travels and/or contact with confirmed or suspected COVID-19 cases, pharmacists should assess the risk and intervene/advise accordingly, as per the table below. (Centro de Informaao do Medicamento - CEDIME Portugal, 2020).

**It should be considered that in a large number of countries, local community-based contagion has become the main form of disease transmission. Hence, while travel history from affected areas is still an important criterion in countries with few cases or at an initial stage of the outbreak, it will no longer be a relevant criterion for triage in countries with community transmission.**

Criteria	Intervention
<ul style="list-style-type: none"> <li>• No symptoms (cough, fever or breathing difficulties)</li> <li><b>AND</b></li> <li>• No known recent contact with confirmed or suspected cases of COVID-19 and no recent travel history to affected areas</li> </ul>	<ul style="list-style-type: none"> <li>• Offer reassurance</li> <li>• Highlight preventive measures</li> <li>• Recommend social distancing, home confinement and avoidance of non-essential travelling (domestic and international) whenever possible.</li> <li>• Provide evidence-based information and advice (oral and/or written)</li> </ul>
<ul style="list-style-type: none"> <li>• Symptoms (cough, fever or breathing difficulties)</li> <li><b>AND</b></li> <li>• No known recent contact with confirmed or suspected cases of COVID-19 and no recent travel history to affected areas</li> </ul>	<ul style="list-style-type: none"> <li>• Offer reassurance</li> <li>• Inform that risk of COVID-19 may exist</li> <li>• Whenever possible, isolate the patient in a separate room</li> <li>• Do not physically examine the patient</li> <li>• Reinforce self-protective measures, including the use of an appropriate respirator, gloves and goggles</li> <li>• Highlight measures to prevent further transmission, including the use of a face mask by the patient</li> <li>• Recommend strict social distancing (including with family and close relations), home quarantine and avoidance of all travelling (domestic and international) for at least 14 days</li> <li>• For individuals of higher-risk groups, advise contacting emergency number or hotline or the appropriate health care facility for testing and follow-up care and treatment.</li> <li>• Provide evidence-based information and advice (oral and/or written)</li> </ul>

<ul style="list-style-type: none"> <li>• No symptoms (cough, fever or breathing difficulties)</li> <li><b>AND</b></li> <li>• Known recent contact with confirmed or suspected cases of COVID-19 and/or recent travel history to affected areas</li> </ul>	<ul style="list-style-type: none"> <li>• Offer reassurance</li> <li>• Inform that risk of COVID-19 may exist</li> <li>• Recommend social distancing, home quarantine and avoidance of non-essential travelling (domestic and international) for at least 14 days</li> <li>• Recommend tracing contacts history</li> <li>• In case symptoms appear in the 14 days following contact with confirmed or suspected case, contact emergency number or hotline and follow the appropriate instructions</li> <li>• Provide evidence-based information and advice (oral and/or written)</li> </ul>
<ul style="list-style-type: none"> <li>• Symptoms (cough, fever or breathing difficulties)</li> <li><b>AND</b></li> <li>• Known recent contact with confirmed or suspected cases of COVID-19 and/or recent travel history to affected areas</li> </ul>	<ul style="list-style-type: none"> <li>• Offer reassurance</li> <li>• Inform that risk of COVID-19 may exist</li> <li>• Whenever possible, isolate the patient in a separate room</li> <li>• Do not physically examine the patient</li> <li>• Reinforce self-protective measures, including the use of an appropriate respirator, gloves and goggles</li> <li>• Highlight measures to prevent further transmission, including the use of a face mask by the patient</li> <li>• Recommend strict social distancing (including with family and close relations), home quarantine and avoidance of all travelling (domestic and international) for at least 14 days</li> <li>• For individuals of higher-risk groups, advise contacting emergency number or hotline or the appropriate health care facility for testing and follow-up care and treatment.</li> <li>• Provide evidence-based information and advice (oral and/or written)</li> </ul>
<ul style="list-style-type: none"> <li>• Unavoidable travel plans to affected areas or contact with confirmed or suspected cases of COVID-19</li> </ul>	<ul style="list-style-type: none"> <li>• Offer reassurance</li> <li>• Inform about the situation and ways of transmission</li> <li>• Highlight preventive measures (especially frequent hand washing and avoiding touching one's face)</li> <li>• Highlight self-protection measures, including the use of an appropriate respirator</li> <li>• Provide evidence-based information and advice (oral and/or written)</li> </ul>

Individuals who feel unwell should be advised to stay at home and adopt the general preventive measures of most respiratory infections (see dedicated section below).

The protocol in the table above is also presented in the format of a poster that can be displayed at the pharmacy for the pharmacy personnel (provided as a separate file in multiple languages).

## Referral and isolation

If you suspect that someone may have COVID-19, encourage and support him or her to stay home in quarantine or to seek immediate appropriate medical treatment in a suitable healthcare facility if symptoms are or become strong. The WHO does not advise families or communities to care for individuals with symptoms of SARS-CoV-2 at home except in the circumstances described in the specific section below.

In terms of referral of suspect cases, your national, regional or local health authorities may have developed protocols for this, and it is important that you become familiar with these procedures, follow them and collaborate in their implementation. This may include the isolation, whenever possible, of the suspect case in a separate room and the immediate call to the appropriate emergency services, which should send a team of duly trained and protected professionals to transport the person to the appointed health facility.

This isolation room at the pharmacy should ideally have a private bathroom and the minimum furniture and objects required for the person's comfort while waiting, in order to avoid the potential contamination of such items and the need to decontaminate more items than necessary. While in isolation, patients should be requested to wear a medical mask. Once the suspected case has been transferred to a healthcare facility, the room in which the patient has been isolated and any potentially contaminated areas such as toilets should be cleaned and disinfected using appropriate products and procedures (see specific section on this below).

## Home care for patients with suspected SARS-CoV-2 infection presenting with mild symptoms

The WHO recommends that suspected cases of COVID-19 are isolated and monitored in a hospital setting to ensure both safety and quality of health care (in case patients' symptoms worsen) and public health security.

However, for several possible reasons, including situations when inpatient care is unavailable or unsafe (i.e. limited capacity and resources unable to meet demand for health care services), or in a case of informed refusal of hospitalisation, alternative settings (including the patient's home) for healthcare provision may need to be considered.

If such a reason exists, patients with mild symptoms and without underlying chronic conditions such as lung or heart disease, renal failure, or immunocompromising conditions that place them at increased risk of developing complications may be cared for at home.

In addition, patients and household members should be educated on personal hygiene, basic infection prevention and control measures, on how to care for the suspected infected member of the family as safely as possible, and on how to prevent spread of infection to household contacts. They should adhere to a series of recommendations that can be found in the specific [guideline](#) from the WHO.

## Pharmacy as an information resource

Pharmacists and their associations may also develop information materials (posters, leaflets, websites, text messages, app alerts, etc) for the community, including the information contained in these guidelines and any other information that may be relevant to local needs. They may also organise question-and-answer sessions in the community (schools, community centres, etc.).

FIP has also developed a small easy-to-print poster with key advice that pharmacists can provide in a range of different scenarios.

FIP also developed a website where these materials and other resources can be accessed.

Please visit [www.fip.org/coronavirus](http://www.fip.org/coronavirus) periodically for updates. In addition to the FIP materials in different languages, this webpage contains guidance documents developed by the Chinese Pharmaceutical Association in both English and Chinese.

Apart from these resources, you may find a vast international compilation of communication resources online in different languages, listed in the section [Other resources and information](#).

## Laboratory testing for COVID-19 in suspected human cases

There are currently fewer than a dozen tests available for diagnosing COVID-19 (SARS-COV-2 infection), produced in the USA, several European countries, China, Korea and other countries. They are all based on complex polymerase chain reaction (PCR) or reverse transcription polymerase chain reaction (RT-PCR) techniques targeting different parts of the viral genome.

After nasopharyngeal sampling (either nose, throat swabs, and/or nasopharyngeal aspirate) performed by qualified nursing or medical staff, and once received by clinical laboratories, available tests generally take less than six hours to deliver a result. A priority order of testing for periods when demand for diagnostic testing may exceed local laboratory capacities and triaging of requests might be required. Such priority rules should be inquired about to the national or regional competent authorities.

Tests are not all equivalent in terms of sensitivity due to the viral genomic sequence or the targeted viral gene(s). There are currently no reliable scientific data available for establishing a classification of the sensitivity of the various diagnostic tests on the market.

So far, there is no rapid test device available on the market, and community pharmacies must refer patients under investigation to their local or national health authorities in order to know where to address patients for both nasopharyngeal sampling and COVID-19 (SARS-COV-2) diagnostic testing.

For pharmacists working in clinical biology laboratories who may be involved in the diagnostic testing of samples from suspected human cases, the WHO has developed an interim guidance that may be found [here](#).

The clinical laboratory staff, because of their direct exposure to potential patients, even if asymptomatic, during the sampling of blood or any other biologic liquid must make every effort to protect themselves from contagion by following the recommendations of their national health authorities (wearing surgical masks and other recommendations).

Clinical laboratories should be particularly careful to either send, or provide proper guidance to clinical practitioners on sending samples to the selected reference laboratories of their countries, and to inquire about them to the national competent authorities. The WHO can assist member states in identifying laboratories able to provide this support. All samples for COVID-19 testing should be packaged and transported in accordance with United Nations Category B model regulations for transportation. UN 3373 packaging must be used for sample transport.

If asked to set up a diagnostic method, clinical laboratory staff should inquire about the applicable recommendations and requirements from their national health authorities.

Additional guidance can be found on the website of the [USA Centers for Disease Control and Prevention – Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from Patients Under Investigation \(PUIs\) for 2019 Novel Coronavirus \(2019-nCoV\)](#). (Centers for Disease Control and Prevention, 2020)

## Infection control: hand washing and hand rubbing

Pharmacies may play an important public health role by raising awareness about the importance of frequent and appropriate hand washing and by stocking or preparing alcohol-based hand sanitiser.

Hand hygiene is essential for preventing the spread of the virus, and should be performed by applying the [correct technique recommended by the WHO](#) and using either soap and running water or an alcohol-based hand sanitiser.

The WHO recommends that handrub formulations should have an alcohol content of 80% ethanol or 75% isopropyl alcohol.

## How to prepare alcohol-based handrub formulations

For detailed information on how to prepare handrub formulations, including calculation and formulation methods and a step-by-step guide for local producers, refer to the WHO's *Guide to Local Production: WHO-recommended Handrub Formulations*, which we reproduce in these guidelines for easier reference ([Annex 3](#)).

The document is also available at:

[https://www.who.int/gpsc/5may/Guide\\_to\\_Local\\_Production.pdf](https://www.who.int/gpsc/5may/Guide_to_Local_Production.pdf)

## Cleaning and disinfection management

Because COVID-19 can be transmitted through droplets and contact, any areas of the hospital or pharmacy environment that may have been contaminated with the virus should be disinfected. Previous studies on SARS CoV and MERS-CoV suggest that SARS-CoV-2 is sensitive to ultraviolet radiation and heat (56°C for 30 minutes) (Cinatl J Rabenau HF, 2005). Also, the following disinfectants could effectively inactivate SARS-CoV-2: ether, 75% ethanol, chlorine-containing disinfectants, peracetic acid and chloroform. Chlorhexidine could not effectively inactivate SARS-CoV-2.

Kampf and collaborators have also concluded from the analysis of 22 studies that human coronaviruses such as Severe Acute Respiratory Syndrome (SARS) coronavirus, Middle East Respiratory Syndrome (MERS) coronavirus or endemic human coronaviruses (HCoV) can persist on inanimate surfaces like metal, glass or plastic for up to nine days, but can be efficiently inactivated by surface disinfection procedures with ethanol (even at 62–71%), 0.5% hydrogen peroxide or 0.1% sodium hypochlorite within one minute. (Kampf G, 2020)

More recent evidence from studies with SARS-CoV-2 (Neeltje van Doremalen, 2020), however, concluded that the virus remains stable and viable on different materials for up to 72 hours, as per the table below:

Type of surface / aerosol	Viability	Half-life
Aerosols	Up to 3 hours	1.1-1.2 hours
Stainless steel	Up to 48-72 hours	5.6 hours
Cardboard/paper	Up to 24 hours	3.46 hours
Plastic	Up to 72 hours	6.8 hours
Copper	Up to 4 hours	0.7 hours

These findings echo those with SARS-CoV-1, in which these forms of transmission were associated with nosocomial spread and super-spreading events, and they provide information for pandemic mitigation efforts. (Neeltje van Doremalen, 2020)

The pharmacy staff should clean and disinfect the working environment, and associated articles and equipment in accordance with the relevant cleaning and disinfection guidelines and regulations. (Chinese Pharmaceutical Association, 2020)

For a list of disinfectants and their application to commonly contaminated objects, see [Annex 4](#).



In addition, the United States' CDCs have published [guidance](#) with detailed recommendations on the cleaning and disinfection of households where persons under investigation or those with confirmed COVID-19 reside or may be in self-isolation. The guidance is aimed at limiting the survival of the virus in the environments. A relevant distinction this document establishes is between cleaning and disinfecting:

- **Cleaning** refers to the removal of germs, dirt, and impurities from surfaces. Cleaning does not kill germs, but by removing them, it lowers their numbers and the risk of spreading infection.
- **Disinfecting** refers to using chemicals to kill germs on surfaces. This process does not necessarily clean dirty surfaces or remove germs, but by killing germs on a surface after cleaning, it can further lower the risk of spreading infection. (Centers for Disease Control and Prevention, 2020)

### Infection control: other precautions

1. Respiratory hygiene should be practised by all, especially ill persons, at all times. Respiratory hygiene refers to covering the mouth and nose during coughing or sneezing using medical masks, cloth masks, tissues or a flexed elbow, followed by hand hygiene.
2. Discard materials used to cover the mouth or nose or clean them appropriately after use (e.g. wash handkerchiefs using regular soap or detergent and water).
3. Avoid direct contact with bodily fluids, particularly oral or respiratory secretions, and stool. Use disposable gloves and eye protection to provide oral or respiratory care and when handling stool, urine and waste. Perform hand hygiene before and after removing gloves.
4. Gloves, tissues, masks and other waste generated by ill persons or in the care of ill persons should be placed in a lined container in the ill person's room before disposal with other household waste.
5. Avoid other types of possible exposure to ill persons or contaminated items in their immediate environment (e.g. avoid sharing toothbrushes, cigarettes, eating utensils, dishes, drinks, towels, washcloths or bed linen). Eating utensils and dishes should be cleaned with either soap or detergent and water after use and may be reused instead of being discarded.
6. Clean and disinfect frequently touched surfaces such as bedside tables, bedframes, and other bedroom furniture daily with regular household disinfectant containing a diluted bleach solution (1 part bleach to 99 parts water).
7. Clean and disinfect bathroom and toilet surfaces at least once daily with regular household disinfectant containing a diluted bleach solution (1 part bleach to 99 parts water). Members of the public should perform hygiene properly and frequently, especially after using the toilet (putting the toilet lid down before flushing to avoid spreading germs). (Centre for Health Protection Hong Kong, 2020)
8. Clean clothes, bedclothes, bath and hand towels, etc, of ill persons using regular laundry soap and water or machine wash at 60–90°C with common household detergent, and dry thoroughly. Place contaminated linen into a laundry bag. Do not shake soiled laundry. Countries may consider measures to ensure that waste is disposed of at a sanitary landfill, and not at an unmonitored open dump, wherever possible. Additional measures may be needed to prevent unhygienic reuse of gloves and masks, and to avoid direct contact of the skin and clothes with the contaminated materials.
9. Use disposable gloves, eye protection and protective clothing (e.g. plastic aprons)

when cleaning or handling surfaces, clothing or linen soiled with bodily fluids. Perform hand hygiene before and after removing gloves. (World Health Organization, 2020)

Another useful document to consult for general guidance on the prevention and control of outbreaks of respiratory diseases was produced by WHO and is available from [here](#). (World Health Organization, 2014)

## Addressing travel concerns

People may be concerned about the possibility of travelling in the same aeroplane, ship, bus or other vehicle with a person infected with COVID-19, and may ask the pharmacy about this.

As the transmission of COVID-19 virus has been increasing around the world, members of the public are advised to consider delaying all non-essential travel.

The public should take heed of the health advice below when travelling:

1. Avoid travelling to any areas where there is widespread community transmission of COVID-19 virus;
2. When travelling to countries/areas with active community transmission of COVID-19 virus, avoid close contact with persons with fever or respiratory symptoms. If it is unavoidable to come into contact with them, put on a surgical mask and continue to do so until 14 days after returning to your country;
3. Avoid visiting hospitals. If it is necessary to visit a hospital, put on a surgical mask and observe strict personal and hand hygiene;
4. Avoid touching animals (including game), poultry/birds and their droppings;
5. Avoid visiting wet markets, live poultry markets and farms;
6. Do not consume game meat and do not visit food premises where game meat is served;
7. Adhere to food safety and hygiene rules such as avoiding consuming raw or undercooked animal products, including milk, eggs and meat, or foods which may be contaminated by animal secretions, excretions (such as urine) or contaminated products, unless they have been properly cooked, washed or peeled;
8. If feeling unwell when travelling, especially if experiencing a fever or cough, wear a surgical mask, inform the hotel staff or tour escort and seek medical advice at once; and
9. After returning to your country, consult a medical professional promptly if experiencing a fever or other symptoms, take the initiative to inform them of any recent travel history and any exposure to animals, and wear a surgical mask to help prevent spread of the disease.

It is useful to remind people that person-to-person spread of COVID-19 occurs mainly via respiratory droplets produced when an infected person coughs or sneezes, similar to how influenza and other respiratory pathogens spread. As such, this can happen during travelling.

So, if a person is having a fever and cough, they should be advised to avoid travelling.

Several countries are taking measures to restrict travelling or to screen passengers at airports and ports with the aim of early detection of symptomatic travellers for further evaluation and treatment, and thus prevent exportation of the disease while minimising interference with international traffic.

Screening includes: checking for signs and symptoms (fever above 38°C, cough); interviewing passengers with respiratory infection symptoms coming from affected areas; directing symptomatic travellers to further medical examination followed by testing for SARS-CoV-2; and keeping confirmed cases under isolation and treatment. (World Health Organization, 2020)

## Pharmacy staff

Although it is important that all pharmacy staff are familiar with these guidelines and advice, the assessment of a patient's risk of COVID-19 among the population should be led by community pharmacists. They are also responsible for appropriately referring suspected cases to the relevant healthcare facility and authorities.

Obviously, the possibility of exposure of front-line pharmacists to COVID-19 exists, because they are interacting with patients who are possibly infected, therefore healthcare workers should take measures to protect themselves as well.

The entire pharmacy team should be trained not only to know what to do when there is a suspicion of infection by COVID-19, but also to promote measures to prevent the infection among the public. Therefore, it is recommended that the entire pharmacy team be trained in:

- Technical and scientific information on COVID-19, in particular on the symptoms, incubation period and mode of transmission of the virus;
- Epidemiological information on affected areas. For updated figures of the number of confirmed cases per country, visit the webpage <https://www.worldometers.info/coronavirus/> and/or the webpage developed by the Center for Systems Science and Engineering at Johns Hopkins University.
- Information on prevention measures including information on disinfectants and proper hand hygiene;
- Information on how to proceed in a suspected case, including strategies that each pharmacy should implement;
- Materials available to support the intervention (information brochures, intervention flow charts and accurate information websites). (Centro de Informação do Medicamento - CEDIME Portugal, 2020)

## Answers to frequent questions from the public and patients

### What is a novel coronavirus?

A novel coronavirus is one that has not been previously identified. The SARS-CoV-2 is not that same as the [coronaviruses that commonly circulate among humans](#) and cause mild illness, like the common cold. A diagnosis with coronavirus 229E, NL63, OC43, or HKU1 is not the same as a SARS-CoV-2 diagnosis. These are different viruses and patients with SARS-CoV-2 will be evaluated and cared for differently than patients with common coronavirus diagnosis. (Centers for Disease Control and Prevention, 2020)

### What is the source of SARS-CoV-2?

Public health officials and partners are working hard to identify the source of the SARS-CoV-2. Coronaviruses are a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats and bats. Analysis of the genetic tree of this virus is ongoing to determine the specific source of the virus and bats have been suspected due to the high resemblance between this virus and other coronaviruses commonly found in certain bat species. Severe Acute Respiratory Syndrome (SARS), another coronavirus that emerged to infect people, came from civet cats, whereas Middle East Respiratory Syndrome (MERS) came from camels. (Centers for Disease Control and Prevention, 2020)

### How does the virus spread?

This virus probably originally emerged from an animal source but now it is spreading from person to person. Most often, spread from person to person happens among close contacts (about 6 feet/1.8 metres) and mainly via respiratory droplets produced when an infected person coughs or sneezes, similar to how influenza and other respiratory

pathogens spread. These droplets can land in the mouths, noses or eyes of people who are nearby or possibly be inhaled into the lungs. Infection can also occur if a person touches an infected surface and then touches his or her eyes, nose, or mouth.

**Can COVID-19 be caught from a person showing no symptoms?**

Transmission of SARS-CoV-2 from asymptomatic individuals (or individuals within the incubation period) has been described. However, the extent to which this occurs remains unknown. Large-scale serologic screening may be able to provide a better sense of the scope of asymptomatic infections and inform epidemiologic analysis. (McIntosh, UpToDate Coronavirus disease 2019 (COVID-19): Transmission, 2020)

**Can a pregnant woman transmit the virus to the foetus?**

Minimal information is available regarding COVID-19 during pregnancy. Intrauterine or perinatal transmission has not been identified. In two reports including a total of 18 pregnant women with suspected or confirmed COVID-19 pneumonia, there was no laboratory evidence of transmission of the virus to the neonate. However, two neonatal cases of infection have been documented. In one case, the diagnosis was made at day 17 of life after close contact with the infant's mother and a maternity matron who were both infected with the virus. The other case was diagnosed 36 hours after birth; the source and time of transmission in that case were unclear. (McIntosh, Coronavirus disease 2019 (COVID-19) - Special situation: Pregnant women, 2020)

**Can the virus be transmitted from mother to child via breastfeeding?**

In limited studies on women with COVID-19 and another coronavirus infection, Severe Acute Respiratory Syndrome (SARS-CoV), the virus has not been detected in breast milk; however it is not known whether mothers with COVID-19 can transmit the virus via breast milk. Breast milk provides protection against many illnesses. There are rare exceptions when breastfeeding or feeding expressed breast milk is not recommended. CDC has no specific guidance for breastfeeding during infection with similar viruses like SARS-CoV or Middle Eastern Respiratory Syndrome (MERS-CoV) also both coronaviruses. In a similar situation to COVID-19, the CDC recommends that a mother with flu continue breastfeeding or feeding expressed breast milk to her infant while taking precautions to avoid spreading the virus to her infant. Given low rates of transmission of respiratory viruses through breast milk, the World Health Organization states that mothers with COVID-19 can breastfeed. (Academy of Breastfeeding Medicine, 2020)

**Is SARS-CoV-2 the same as the MERS-CoV or SARS virus?**

No. Coronaviruses are a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats and bats. The recently emerged SARS-CoV-2 is not the same as the coronaviruses that cause MERS or SARS. However, genetic analyses suggest it emerged from a virus related to the one that caused SARS. There are ongoing investigations to learn more. This is a rapidly evolving situation and information will be updated as it becomes available. (Centers for Disease Control and Prevention, 2020)

**I have fever and cough. Could it be the novel coronavirus?**

If you have been in close contact with a confirmed case of COVID-19, it could be, and you may need to be followed up and tested. The symptoms of COVID-19 are not specific to this disease and can be quite similar to those of seasonal influenza or other conditions. However, if you experience any of the symptoms, you are advised to self-isolate at home and follow the directions of your national health authorities. If you are older than 65 years of age or have other conditions such as cardiovascular diseases, diabetes, chronic respiratory diseases, cancer or other conditions (congenital or acquired) that might compromise your immune response, you may be higher risk of developing more severe forms of the diseases, and it is advisable to seek appropriate medical care.

**What can I do to protect myself from infection?**

Usual hygiene measures to prevent infections spreading should be followed: regular hand washing, covering the mouth and nose when coughing and sneezing into a flexed elbow or a disposable paper tissue, and thoroughly cooking meat and eggs. Avoid close contact with anyone showing symptoms of respiratory illness such as coughing and sneezing. (Royal Pharmaceutical Society, 2020)

**Are there any specific medicines to prevent or treat COVID-19?**

To date, there is no specific medicine recommended to prevent or treat COVID-19. However, those infected with the virus should receive appropriate care to relieve and treat symptoms, and those with severe illness should receive optimised supportive care. Some specific treatments are under investigation and will be tested through clinical trials. The WHO is helping to accelerate research and development efforts with a range of partners. (World Health Organization, 2020)

The following measures are not specifically recommended as COVID-19 remedies because they are not effective to protect yourself and can be even harmful:

- Taking vitamin C;
- Drinking traditional herbal teas;
- Wearing multiple masks to maximise protection;
- Self-medicating with medicines such as antibiotics;
- Alternative medicine without appropriate evidence of effectiveness.

In any case, if you have fever, cough and difficulty breathing seek medical care early to reduce the risk of developing a more severe infection and be sure to share your recent travel history with your healthcare provider.

**Do vaccines against pneumonia protect you against COVID-19?**

No. Vaccines against pneumonia, such as pneumococcal vaccine (PV) and Haemophilus influenza type B (Hib) vaccine, do not provide protection against COVID-19. The virus is so new and different that it needs its own vaccine. Researchers are trying to develop one and the WHO is supporting their efforts. Although PV and Hib are not effective against COVID-19, vaccination against respiratory illnesses is highly recommended to protect your health. (World Health Organization, 2020)

**Are antibiotics effective in treating COVID-19?**

No, antibiotics do not work against viruses; they only work on bacterial infections. COVID-19 is caused by a virus and, therefore, antibiotics should not be used as a means of prevention or treatment. However, if you are hospitalised with COVID-19, you may receive antibiotics because bacterial co-infection is possible. (World Health Organization, 2020)

**Should the treatment with ACE inhibitors or angiotensin receptor blockers be discontinued due to an increased risk of COVID-19 severity?**

There is no evidence to support the assertion and that treatment with ACE inhibitors (ACEi) or angiotensin receptor blockers (ARB) could predispose individuals to adverse outcomes should they become infected with COVID-19. Various scientific and professional societies have stated that patients should continue treatment with ACEi and ARB unless specifically advised to stop by their medical team. (British Cardiovascular Society and British Society for Heart Failure, 2020)

**Is it safe to use non-steroidal anti-inflammatory medicines including ibuprofen to manage fever and pain in COVID-19 patients?**

There is currently no conclusive evidence to establish a direct association between the use of non-steroidal anti-inflammatory medications (including ibuprofen) and increased risk of infection or severity of disease. (European Medicines Agency, 2020)

### **Could the virus mutate before any treatment or vaccines are developed?**

Yes. In fact, the virus seems to have mutated already, leading to at least two different strains. Population genetic analyses of 103 SARS-CoV-2 genomes indicated that these viruses evolved into two major types (designated L and S). Although the L type (~70%) is more prevalent than the S type (~30%), the S type was found to be the ancestral version. (Xiaolu Tang, 2020)

While both types play a part in the current outbreak, the higher prevalence of the “L-type” suggests that it is more aggressive. However, it is important to keep in mind that viruses mutate all the time and that not all mutations are indicative of increased disease severity or transmission rates. In fact, differences between the two types of the novel coronavirus are so small that researchers are reluctant to even classify them as separate “strains”. Given that multiple groups around the world are working on a vaccine, knowing the exact number of strains (or types) of the virus is crucial because, in order to be effective, the eventual vaccine will have to target features present in all known strains (or types). Luckily, many of the identified genetic differences are unlikely to affect the production of proteins, meaning there should not be significant changes to how the virus operates or the symptoms it causes. (Technology.org, 2020)

### **Can multivitamins and immuno-boosters help in protecting individuals from the virus?**

There is no evidence that any of these strategies will supercharge immunity. While it is true that our physiology requires vitamins and minerals (such as vitamins A, C and zinc) to function normally, higher doses have not been shown to make the system function better.

Every part of the body, including the immune system, functions better when protected from environmental assaults and bolstered by healthy-living strategies such as the following:

- Not smoking;
- Eating a diet high in fruits and vegetables;
- Exercising regularly;
- Maintaining a healthy weight;
- Avoiding drinking alcohol, or drinking only in moderation;
- Getting adequate sleep;
- Taking steps to avoid infection, such as washing hands frequently and cooking meats thoroughly;
- Trying to minimise stress. (Harvard Medical School, 2014)

### **Can people who recover from COVID-19 be infected again?**

The immune response to COVID-19 is not yet understood. Patients with MERS-CoV infection are unlikely to be re-infected shortly after they recover, but it is not yet known whether similar immune protection will be observed for patients with COVID-19. (Centers for Disease Control and Prevention, 2020)

### **Will COVID-19 go away on its own in warmer weather?**

For the novel coronavirus SARS-CoV-2, there is reason to expect that, like other betacoronaviruses, it may transmit somewhat more efficiently in winter than summer, although the mechanism(s) responsible are unknown. The size of the change is expected to be modest, and not enough to stop transmission on its own. Based on the analogy of pandemic flu, it is expected that SARS-CoV-2, as a virus new to humans, will face less immunity and thus transmit more readily even outside the winter season. Changing seasons and school vacation may help, but are unlikely to stop transmission. Urgent for effective policy is to determine if children are important transmitters, in which case school closures may help slow transmission, or not, in which case resources would be wasted in such closures. (Lipsitch, 2020)

**Is it safe to receive a letter or a package from any area where COVID-19 has been reported?**

Yes. The likelihood of an infected person contaminating commercial goods is low and the risk of catching the virus that causes COVID-19 from a package that has been moved, travelled, and exposed to different conditions and temperature is also low. (World Health Organization, 2020)

**Can COVID-19 be transmitted via mosquito bites?**

No. COVID-19 is a respiratory virus which spreads primarily through droplets generated when an infected person coughs or sneezes, or through droplets of saliva or discharge from the nose. There is so far no evidence that it could be transmitted by mosquitos. (World Health Organization, 2020)

**Are medical masks effective in protecting me from infection?**

Wearing a medical mask is one of the prevention measures to limit spread of certain respiratory diseases, including COVID-19, in affected areas. However, the use of a mask alone is insufficient to provide the adequate level of protection and other equally relevant measures should be adopted, including adequate hand hygiene and other infection control and prevention measures. (World Health Organization, 2020)

**Is wearing rubber/latex gloves while out in public effective in preventing the new coronavirus infection?**

No. Regularly washing your bare hands offers more protection against catching COVID-19 than wearing rubber gloves. You can still pick up COVID-19 contamination on rubber gloves. If you then touch your face (mouth, nose or eyes), the contamination may infect you. (World Health Organization, 2020).

**Why do some infected patients show negative results on testing kits?**

Because some kits are not as sensitive as others, and because depending on how long and how much people are COVID-19 infected, the diagnostic techniques, all based on either polymerase chain reaction (PCR) or reverse transcription polymerase chain reaction (RT-PCR) targeting different parts of the viral genome, are not equivalent.

**I have been to an affected area and I have diarrhoea. Could it be COVID-19?**

The most common symptoms of COVID-19 are fever, cough and shortness of breath. The disease may also occur with other mild symptoms only, including: low-grade fever, cough, malaise, rhinorrhoea, sore throat without any warning signs, such as shortness of breath or difficulty in breathing, increased respiratory secretions (i.e. sputum or haemoptysis), gastrointestinal symptoms such as nausea, vomiting, and/or diarrhoea and without changes in mental status (i.e. confusion, lethargy). However, if only diarrhoea is present, without any respiratory symptoms, it is unlikely to be COVID-19.

**Can pets at home spread COVID-19?**

At present, there is no evidence that companion animals/pets such as dogs or cats can be infected with COVID-19. However, it is always a good idea to wash your hands with soap and water after contact with pets. This protects you against various common bacteria such as *E coli* and salmonella that can pass between pets and humans. (World Health Organization, 2020)

**I have travelled to one of the countries with a high number of cases of COVID-19.**

**What should I do?**

The risk of exposure to COVID-19 is believed to be highest for those people who have travelled to countries or regions with a high number of confirmed cases of COVID-19.

If you have travelled to any of these countries in the past 14 days you should monitor for symptoms, practise social distancing – avoid crowds and small gatherings in enclosed spaces, and keep a distance of 1-2 metres between yourself and others when out in public.

If you develop symptoms, you must immediately isolate yourself and seek medical care. You should call your doctor, or your local emergency department. Tell the person when you call where you have been. It is important if you have symptoms you should not go to work, school, university, childcare facilities, gyms or public areas, and you should not use public transport, taxis, or ride-sharing services. If you need to seek medical care, wear a surgical mask if available when attending.

**How effective are thermal scanners in detecting people infected with the new coronavirus?**

Thermal scanners are effective in detecting people who have developed a fever (i.e. have a higher than normal body temperature) because of infection with the new coronavirus. However, they cannot detect people who are infected but are not yet sick with fever. This is because it takes between 2 and 10 days before people who are infected become sick and develop a fever. (World Health Organization, 2020)

**Myth busting**

**COVID-19 only affects old people or people with pre-existing diseases**

People of all ages can be infected with SARS-CoV-2 and develop COVID-19. Older people, and people with pre-existing medical conditions (such as asthma, diabetes, heart disease) appear to be more vulnerable to becoming severely ill with the virus.

The WHO advises people of all ages to take steps to protect themselves from the virus, for example by following good hand hygiene and good respiratory hygiene. (World Health Organization, 2020)

**Contact with people from the affected countries should be avoided until we know more about the disease**

Close contact with any person who has been in contact with confirmed cases of COVID-19 in the previous 14 days should be avoided, regardless of their nationality.

**This virus was developed in a laboratory**

Scientists from multiple countries have published and analysed genomes of the causative agent, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and they overwhelmingly conclude that this coronavirus originated in wildlife, as have so many other emerging pathogens. Conspiracy theories do nothing but create fear, rumours, and prejudice that jeopardise global collaboration in the fight against this virus. (Charles Calisher, 2020)

Specifically, genomic studies strongly suggest that the novel coronavirus that causes Covid-19 originated in bats, with no concrete evidence supporting the idea that it was created in a laboratory. (Gregory, 2020) (Begley, 2020) (Shan-Lu Liu, 2020)

**Eating garlic can help prevent COVID-19**

Garlic is a healthy food that may have some antimicrobial properties. However, there is no evidence from the current outbreak that eating garlic has protected people from COVID-19.

**The smoke and gas from fireworks and firecrackers prevent COVID-19**

No. Breathing in the smoke and gas from a firework or firecracker is dangerous and does not kill COVID-19.

**Spraying alcohol or chlorine all over your body can kill the new coronavirus**

No. Spraying alcohol or chlorine all over your body will not kill viruses that have already entered your body. Spraying such substances can be harmful to clothes or mucous membranes (i.e., eyes, mouth). Be aware that both alcohol and chlorine can be useful to disinfect surfaces, but they need to be used under appropriate recommendations. (World Health Organization, 2020)



**Applying sesame oil blocks COVID-19 from entering the body**

No. Sesame oil does not kill SARS-CoV-2. There are some chemical disinfectants that can kill SARS-CoV-2 on surfaces. These include bleach/chlorine-based disinfectants, ether solvents, 75% ethanol, peracetic acid and chloroform. However, they have little or no impact on the virus if you put them on the skin or under your nose. It can even be dangerous to put these chemicals on your skin.

**Drinking anise seeds infusion can help prevent infection with COVID-19**

Anise seeds infusion is a drink that may have some hydrating properties. However, there is no evidence from the current outbreak that drinking anise seeds infusion has protected people from COVID-19.

**Gargling mouthwash protects you from COVID-19**

No, it does not. There is no evidence that using mouthwash will protect you from COVID-19. Some brands of mouthwash can eliminate certain microbes for a few minutes in the saliva in your mouth. However, this does not mean they protect you from COVID-19. (World Health Organization, 2020)

**Regularly rinsing your nose with saline helps prevent COVID-19**

No, it does not. There is no evidence that regularly rinsing the nose with saline has protected people from infection with COVID-19. There is some limited evidence that regularly rinsing the nose with saline can help people recover more quickly from the common cold. However, regularly rinsing the nose has not been shown to prevent respiratory infections. (World Health Organization, 2020)

## **Additional resources and information**

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## Other resources and information

### In English

Key contents	Published by	Hyperlink (click to consult)
Novel coronavirus (SARS-CoV-2) – Updates	World Health Organization	<a href="https://www.who.int/emergencies/diseases/novel-coronavirus-2019">https://www.who.int/emergencies/diseases/novel-coronavirus-2019</a>
Wuhan novel coronavirus – Five key facts for pharmacy teams	Royal Pharmaceutical Society (UK)	<a href="https://www.rpharms.com/resources/pharmacy-guides/wuhan-novel-coronavirus">https://www.rpharms.com/resources/pharmacy-guides/wuhan-novel-coronavirus</a>
Everything you should know about the coronavirus outbreak	<i>The Pharmaceutical Journal</i> (UK)	<a href="https://www.pharmaceutical-journal.com/news-and-analysis/features/everything-you-should-know-about-the-coronavirus-outbreak/20207629.article">https://www.pharmaceutical-journal.com/news-and-analysis/features/everything-you-should-know-about-the-coronavirus-outbreak/20207629.article</a>
Overview of novel coronavirus (SARS-CoV-2)	<i>British Medical Journal – Best Practice</i> (UK)	<a href="https://bestpractice.bmj.com/topics/en-gb/3000165#referencePop13">https://bestpractice.bmj.com/topics/en-gb/3000165#referencePop13</a>
2019 novel coronavirus	Centers for Disease Control and Prevention (USA)	<a href="https://www.cdc.gov/coronavirus/2019-ncov/index.html">https://www.cdc.gov/coronavirus/2019-ncov/index.html</a>
Novel coronavirus	European Centre for Disease Prevention and Control	<a href="https://www.ecdc.europa.eu/en/novel-coronavirus-china">https://www.ecdc.europa.eu/en/novel-coronavirus-china</a>
SARS-CoV-2 Global Cases by Johns Hopkins CSSE confirmed cases update	Johns Hopkins University – Center for Systems Science and Engineering	<a href="https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6">https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6</a>
Pharmacists warned to be on alert for coronavirus infections	Pharmaceutical Society of Australia – <i>Australian Pharmacist</i>	<a href="https://www.australianpharmacist.com.au/pharmacists-warned-to-be-on-alert-for-coronavirus-infections/">https://www.australianpharmacist.com.au/pharmacists-warned-to-be-on-alert-for-coronavirus-infections/</a>
The Lancet SARS-CoV-2 Resource Centre (open access)	<i>The Lancet</i>	<a href="https://www.thelancet.com/coronavirus">https://www.thelancet.com/coronavirus</a>
Coronavirus research centre (open access)		
Wiley-published articles related to coronavirus from the <i>Journal of Medical Virology</i> , <i>Transboundary and Emerging Diseases</i> , <i>Zoonoses and Public Health</i> and several other	Wiley Scientific Publisher	<a href="https://secure.wiley.com/Coronavirus2020">https://secure.wiley.com/Coronavirus2020</a>

### In Arabic

Key contents	Published by	Hyperlink (click to consult)
Guide to avoid coronavirus infection	Ministry of public health (Lebanon)	<a href="http://www.moph.gov.lb">www.moph.gov.lb</a>
Guide for coronavirus	Ministry of health and prevention (UAE)	<a href="http://www.mohap.gov.ae">www.mohap.gov.ae</a>

### In Chinese

Key contents	Published by	Hyperlink (click to consult)
Coronavirus SARS-CoV-2 Infection: Expert Consensus on Guidance and Prevention Strategies for Retail Pharmacy Pharmacists and the Pharmacy Workforce (1st Edition)	Chinese Pharmaceutical Association. (February 10,2020)	<a href="https://www.fip.org/files/content/priority-areas/coronavirus/CH-CPA-CORONAVIRUS-2019-nCoV-Expert-Consensus-on-Guidance-and-Prevention.pdf">https://www.fip.org/files/content/priority-areas/coronavirus/CH-CPA-CORONAVIRUS-2019-nCoV-Expert-Consensus-on-Guidance-and-Prevention.pdf</a>
Information about disease control and prevention for SARS-CoV-2	National Health Commission of the People's Republic of China	<a href="http://www.nhc.gov.cn/xcs/zhengcwj/list_gzbd.shtml">http://www.nhc.gov.cn/xcs/zhengcwj/list_gzbd.shtml</a>



Suggestions about diagnosis and treatment of novel coronavirus pneumonia in pharmacy work	Zhejiang Hospital Pharmacy Administration & Quality Control Centre	<a href="http://www.zjyszk.com/tzgg/ShowContent_11605.htm">http://www.zjyszk.com/tzgg/ShowContent_11605.htm</a>
Protection strategies of pharmaceutical posts, pharmacists and logistics personnel in the context of novel coronavirus infection	Department of Pharmacy, Zhongnan Hospital of Wuhan University	<a href="http://www.zgys.org/ch/reader/view_news.aspx?id=20200128200338001&amp;category_id=zxxx">http://www.zgys.org/ch/reader/view_news.aspx?id=20200128200338001&amp;category_id=zxxx</a>
Severe respiratory disease associated with a novel infectious agent (information and resource centre)	Centre for Health Protection, Department of Health, Government of Hong Kong SAR	<a href="https://www.chp.gov.hk/sc/features/102465.html">https://www.chp.gov.hk/sc/features/102465.html</a> (Simplified Chinese)
		<a href="https://www.chp.gov.hk/tc/features/102465.html">https://www.chp.gov.hk/tc/features/102465.html</a> (Traditional Chinese)
Novel coronavirus: questions and answers in Chinese	National Institute for Public Health and the Environment (The Netherlands)	<a href="https://www.rivm.nl/coronavirus/nieuw-coronavirus-in-China/Chinese">https://www.rivm.nl/coronavirus/nieuw-coronavirus-in-China/Chinese</a>

## In French

Key contents	Published by	Hyperlink (click to consult)
Coronavirus	Ministère des Solidarités et de la Santé (France)	<a href="https://solidarites-sante.gouv.fr/soins-et-maladies/maladies/maladies-infectieuses/coronavirus/">https://solidarites-sante.gouv.fr/soins-et-maladies/maladies/maladies-infectieuses/coronavirus/</a>
Coronavirus : informations pour les professionnels de santé	Ministère des Solidarités et de la Santé (France)	<a href="https://solidarites-sante.gouv.fr/soins-et-maladies/maladies/maladies-infectieuses/coronavirus/coronavirus-PS">https://solidarites-sante.gouv.fr/soins-et-maladies/maladies/maladies-infectieuses/coronavirus/coronavirus-PS</a>
Cas de pneumonies associées à un nouveau coronavirus (SARS-CoV-2) à Wuhan, en Chine	Santé Publique France	<a href="https://www.santepubliquefrance.fr/maladies-et-traumatismes/maladies-et-infections-respiratoires/infection-a-coronavirus/articles/cas-de-pneumonies-associees-a-un-nouveau-coronavirus-2019-ncov-a-wuhan-en-chine">https://www.santepubliquefrance.fr/maladies-et-traumatismes/maladies-et-infections-respiratoires/infection-a-coronavirus/articles/cas-de-pneumonies-associees-a-un-nouveau-coronavirus-2019-ncov-a-wuhan-en-chine</a>
Avis relatif aux mesures d'hygiène pour la prise en charge d'un patient considéré comme cas suspect, possible ou confirmé d'infection à SARS-CoV-2	Société française d'hygiène hospitalière SF2H	<a href="https://solidarites-sante.gouv.fr/IMG/pdf/sf2h_mesures_hygiene_prise_en_charge_2019-ncov_280120_.pdf">https://solidarites-sante.gouv.fr/IMG/pdf/sf2h_mesures_hygiene_prise_en_charge_2019-ncov_280120_.pdf</a>
Surveillance des patients suspects d'infection due au nouveau coronavirus (SARS-CoV-2)	Santé Publique France	<a href="https://www.santepubliquefrance.fr/content/download/27118/2491785">https://www.santepubliquefrance.fr/content/download/27118/2491785</a>

## In Portuguese

Key contents	Published by	Hyperlink (click to consult)
Fluxograma de atuação / Decision tree	Associação Nacional das Farmácias (Portugal)	<a href="https://www.revistasauda.pt/SiteCollectionDocuments/ANFOnline/Fluxograma_CEDIMEFinal.pdf">https://www.revistasauda.pt/SiteCollectionDocuments/ANFOnline/Fluxograma_CEDIMEFinal.pdf</a>
Recomendações da Direção-Geral da Saúde	Direção-Geral da Saúde (Portugal)	<a href="https://www.revistasauda.pt/SiteCollectionDocuments/ANFOnline/Cartaz%20DGS%202.pdf">https://www.revistasauda.pt/SiteCollectionDocuments/ANFOnline/Cartaz%20DGS%202.pdf</a>
Novo coronavírus: o que é, causas, sintomas, tratamento, diagnóstico e prevenção	Ministério da Saúde do Brasil	<a href="https://saude.gov.br/saude-de-a-z/novocoronavirus">https://saude.gov.br/saude-de-a-z/novocoronavirus</a>

## In Russian

Key contents	Published by	Hyperlink (click to consult)
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Guidelines for the prevention, diagnosis and treatment of new coronavirus infection SARS-CoV-2	Ministry of Health of Russia	<a href="https://www.rosminzdrav.ru/news/2020/02/03/13264-minzdrav-rossii-obnovil-vremennye-metodicheskie-rekomendatsii-po-profilaktike-diagnostike-i-lecheniyu-novoy-koronavirusnoy-infektsii-2019-ncov">https://www.rosminzdrav.ru/news/2020/02/03/13264-minzdrav-rossii-obnovil-vremennye-metodicheskie-rekomendatsii-po-profilaktike-diagnostike-i-lecheniyu-novoy-koronavirusnoy-infektsii-2019-ncov</a>
Chronological timeline on the coronavirus outbreak	Interfax Ltd (news agency)	<a href="https://www.interfax.ru/chronicle/novyi-koronavirus-v-kitae.html">https://www.interfax.ru/chronicle/novyi-koronavirus-v-kitae.html</a>

## In Spanish

Key contents	Published by	Hyperlink (click to consult)
Cobertura nuevo coronavirus (SARS-CoV-2)	Organización Panamericana de la Salud	<a href="https://www.paho.org/hq/index.php?option=com_content&amp;view=article&amp;id=15696:coronavirus&amp;Itemid=4206&amp;lang=es">https://www.paho.org/hq/index.php?option=com_content&amp;view=article&amp;id=15696:coronavirus&amp;Itemid=4206&amp;lang=es</a>
Coronavírus – Informe técnico	Consejo General de Colegios Oficiales de Farmacéuticos (España)	<a href="https://www.portalfarma.com/Profesionales/campanaspf/Asesoramiento-salud-publica/infeccion-coronavirus-2019-nCoV/Documents/Informe-tecnico-Coronavirus.pdf">https://www.portalfarma.com/Profesionales/campanaspf/Asesoramiento-salud-publica/infeccion-coronavirus-2019-nCoV/Documents/Informe-tecnico-Coronavirus.pdf</a>
Nuevo coronavirus SARS-CoV-2 ¿Qué debes saber?	Consejo General de Colegios Oficiales de Farmacéuticos (España)	<a href="https://www.portalfarma.com/Profesionales/campanaspf/Asesoramiento-salud-publica/infeccion-coronavirus-2019-nCoV/Documents/Informacion-poblacion-general-Coronavirus.pdf">https://www.portalfarma.com/Profesionales/campanaspf/Asesoramiento-salud-publica/infeccion-coronavirus-2019-nCoV/Documents/Informacion-poblacion-general-Coronavirus.pdf</a>
Actualizaciones sobre el nuevo coronavirus	Foro Farmacéutico de las Américas	<a href="https://www.facebook.com/Foro-Farmac%C3%A9utico-de-las-Am%C3%A9ricas-128231457332611/?pageid=128231457332611&amp;ftentidentifier=1397744367047974&amp;padding=0">https://www.facebook.com/Foro-Farmac%C3%A9utico-de-las-Am%C3%A9ricas-128231457332611/?pageid=128231457332611&amp;ftentidentifier=1397744367047974&amp;padding=0</a>
Recomendaciones para equipos de salud. Nuevo coronavirus SARS-CoV-2	Ministerio de Salud de Argentina	<a href="https://www.argentina.gob.ar/salud/recomendaciones-equipos-de-salud-coronavirus-2019-ncov">https://www.argentina.gob.ar/salud/recomendaciones-equipos-de-salud-coronavirus-2019-ncov</a>
Plan de acción coronavirus SARS-CoV-2	Ministerio de Salud de Chile	<a href="https://www.minsal.cl/nuevo-coronavirus-2019-ncov/">https://www.minsal.cl/nuevo-coronavirus-2019-ncov/</a>
Lineamientos nacionales para la vigilancia de la infección por coronavirus (SARS-CoV-2)	Ministerio de Salud de Costa Rica	<a href="https://www.ministeriodesalud.go.cr/index.php/centro-de-prensa/noticias/741-noticias-2020/1532-lineamientos-nacionales-para-la-vigilancia-de-la-infeccion-por-coronavirus-2019-ncov">https://www.ministeriodesalud.go.cr/index.php/centro-de-prensa/noticias/741-noticias-2020/1532-lineamientos-nacionales-para-la-vigilancia-de-la-infeccion-por-coronavirus-2019-ncov</a>
Información general sobre el “nuevo coronavirus”	Gobierno de México, Secretaría de Salud	<a href="https://www.gob.mx/salud/documentos/nuevo-coronavirus">https://www.gob.mx/salud/documentos/nuevo-coronavirus</a>
MSP informa sobre situación epidemiológica de coronavirus	Ministerio de Salud Pública de Uruguay	<a href="https://www.gub.uy/ministerio-salud-publica/comunicacion/noticias/msp-informa-sobre-situacion-epidemiologica-coronavirus">https://www.gub.uy/ministerio-salud-publica/comunicacion/noticias/msp-informa-sobre-situacion-epidemiologica-coronavirus</a>
Dos estudios apoyan que el murciélago está en el origen del coronavirus de Wuhan	Correo Farmacéutico	<a href="https://www.correofarmacaceutico.com/investigacion/dos-estudios-apoyan-que-el-murcielago-esta-en-el-origen-del-coronavirus-de-wuhan.html">https://www.correofarmacaceutico.com/investigacion/dos-estudios-apoyan-que-el-murcielago-esta-en-el-origen-del-coronavirus-de-wuhan.html</a>

## In Swedish

Key contents	Published by	Hyperlink (click to consult)
Frågor och svar om nytt coronavirus SARS-CoV-2	Folkhälsomyndigheten	<a href="https://www.folkhalsomyndigheten.se/smittskydd-beredskap/smittsamma-sjukdomar/coronavirus/fragor-och-svar-om-nytt-coronavirus/">https://www.folkhalsomyndigheten.se/smittskydd-beredskap/smittsamma-sjukdomar/coronavirus/fragor-och-svar-om-nytt-coronavirus/</a>
Coronavirus Vårdguiden 1177	Västra Götalandsregionen	<a href="https://www.1177.se/Vastra-Gotaland/aktuellt/nytt-coronavirus-2019-ncov/">https://www.1177.se/Vastra-Gotaland/aktuellt/nytt-coronavirus-2019-ncov/</a>
Krisinformation för svenska myndigheter	Krisinformation	<a href="https://www.krisinformation.se/nyheter/2020/januari/myndigheterna-om-det-nya-coronaviruset">https://www.krisinformation.se/nyheter/2020/januari/myndigheterna-om-det-nya-coronaviruset</a>

## Validity

This document was initially prepared based on commonly accepted evidence as of 5 February 2020. It was updated with regards to the nomenclature of the virus and the disease on 12 February 2020, and updated again on 19 March 2020 according to newly available evidence.

## ANNEX 1: List of key medicines for the treatment of COVID-19

This list was compiled by the Chinese Pharmaceutical Association, except for paracetamol, which was added by FIP. For the rationale and supporting references for each therapeutic option, consult the original document (in English), available on the FIP dedicated webpage. (Chinese Pharmaceutical Association, 2020) Note: This list is for reference only, medical institution can make adjustments according to their specific conditions.

Type of treatment	Drug name	Dosage form and specifications
Antiviral treatment	Recombinant Human Interferon	Recombinant human interferon $\alpha$ -2a injection: 3 million IU, 5 million IU; Recombinant human interferon $\alpha$ -2b injection; Recombinant human interferon $\alpha$ -2b injection (P.putida): 3 million IU, 5 million IU
	Lopinavir/ritonavir	Capsule : lopinavir 200mg, ritonavir 50mg
	Ribavirin	Injection: 1ml: 0.1g
Antimicrobial agents	According to the existing drug list of the medical institution	
Antipyretic and analgesic treatment	Ibuprofen	Tablet, granules: 0.1g,0.2g ; Capsule: 0.2g ; Slow release (tablet, capsule): 0.3g; Suspension: 60ml:1.2g, 100ml:2g
	Paracetamol / acetaminophen	Up to 4 g per day
	According to the existing drug list of your medical institution	
Corticosteroids ( <i>when strictly necessary, as per medical assessment of individual patients</i> )	Methylprednisolone	Tablet: 4mg (Sodium succinate) sterile powder for injection : 40mg, 500mg
Intestinal microecological preparations	According to the existing drug list of your medical institution	
Other gastrointestinal treatment	According to the existing drug list of your medical institution	
Antitussive treatment	According to the existing drug list of your medical institution	
Sputum removal treatment	According to the existing drug list of your medical institution	
Anti-asthmatic treatment	According to the existing drug list of the medical institution	
Chinese patent medicines	Huoxiangzhengqi	Soft capsule: 0.45g; Dripping pill: 2.6g/bag Concentrated pills: 8 pills drops are equivalent to 3g herbal slices Tincture : 10ml; Oral Solution: 10ml
	Jinhua Qinggan	Granules: 5g (equivalent to 17.3g herbal slices)
	LianhuaQingwen	Capsule: 0.35g; Granules: 6g/bag
	ShufengJiedu	Capsule: 0.52g
	Fangfengtongsheng	Concentrated pills: 8 pills equivalent to 6g herbal slices; Watered pill: 6g/bag Granules: 3g/bag
	Xiyanping	Injection : 2ml:50mg,5ml:125mg
	Xuebijing	Injection : 10ml
	Shenfu	Injection : 10ml
	Shengmai	Injection: 10ml, 20ml

## ANNEX 2: List of key facilities, equipment and personal protective equipment of COVID-19 infections

This list was compiled by the Chinese Pharmaceutical Association. It is applicable particularly to hospital pharmacy settings. For more details, consult the original document (in English), available on the FIP dedicated webpage. (Chinese Pharmaceutical Association, 2020)

Classification		Name
Facilities	Essential	Isolated dispensing window
	Optional	Biological safety cabinet
Equipment	Essential	UV Lamp
		Air steriliser
		Body temperature measuring equipment
		High-pressure steam steriliser
	Transfer box	
Optional	Intelligent distribution equipment	
Personal protective equipment	Essential	Medical protective mask
		Disposable work cap
		Disposable gloves
		Coverall
	Optional	Medical surgical mask
		Medical protective mask (N95 mask or equivalent mask)
		Face shields
		Power-supply air-supply respirator with optional dust filter box or filter tank
		Goggles
		Long sleeve thick rubber gloves
		Work shoes
		Rubber boots
		Waterproof boot cover
		Disposable shoe cover
		Medical gown
Waterproof apron		
Waterproof isolation gown		

## ANNEX 3: WHO guide to local production of handrub formulations

Source: [Guide to Local Production: WHO-recommended Handrub Formulations](#) (World Health Organization, 2010)

### Materials required (small volume production)

REAGENTS FOR FORMULATION 1:	REAGENTS FOR FORMULATION 2:
<ul style="list-style-type: none"> <li>• Ethanol 96%</li> <li>• Hydrogen peroxide 3%</li> <li>• Glycerol 98%</li> <li>• Sterile distilled or boiled cold water</li> </ul>	<ul style="list-style-type: none"> <li>• Isopropyl alcohol 99.8%</li> <li>• Hydrogen peroxide 3%</li> <li>• Glycerol 98%</li> <li>• Sterile distilled or boiled cold water</li> </ul>

- 10-litre glass or plastic bottles with screw-threaded stoppers (1), or
- 50-litre plastic tanks (preferably in polypropylene or high density polyethylene, translucent so as to see the liquid level) (2), or
- Stainless steel tanks with a capacity of 80–100 litres (for mixing without overflowing) (3, 4)
- Wooden, plastic or metal paddles for mixing (5)
- Measuring cylinders and measuring jugs (6, 7)
- Plastic or metal funnel
- 100 ml plastic bottles with leak-proof tops (8)
- 500 ml glass or plastic bottles with screw tops (8)
- An alcohol meter: the temperature scale is at the bottom and the ethanol concentration (percentage v/v) at the top (9, 10, 11)

#### NOTE

- Glycerol: used as humectant, but other emollients may be used for skin care, provided that they are cheap, widely available and miscible in water and alcohol and do not add to toxicity or promote allergy.
- Hydrogen peroxide: used to inactivate contaminating bacterial spores in the solution and is not an active substance for hand antisepsis.
- Any further additive to both formulations should be clearly labelled and be non-toxic in case of accidental ingestion.
- A colorant may be added to allow differentiation from other fluids, but should not add to toxicity, promote allergy, or interfere with antimicrobial properties. The addition of perfumes or dyes is not recommended due to risk of allergic reactions.



## METHOD: 10-LITRE PREPARATIONS

Ten-litre glass or plastic bottles with screw-threaded stoppers are suitable.

### Recommended amounts of products:

FORMULATION 1	FORMULATION 2
<ul style="list-style-type: none"><li>• Ethanol 96%: 8333 ml</li><li>• Hydrogen peroxide 3%: 417 ml</li><li>• Glycerol 98%: 145 ml</li></ul>	<ul style="list-style-type: none"><li>• Isopropyl alcohol 99.8%: 7515 ml</li><li>• Hydrogen peroxide 3%: 417 ml</li><li>• Glycerol 98%: 145 ml</li></ul>

### Step-by-step preparation:



1. The alcohol for the formula to be used is poured into the large bottle or tank up to the graduated mark.



4. The bottle/tank is then topped up to the 10-litre mark with sterile distilled or cold boiled water.

5. The lid or the screw cap is placed on the tank/bottle as soon as possible after preparation, in order to prevent evaporation.



2. Hydrogen peroxide is added using a measuring cylinder.



6. The solution is mixed by shaking gently where appropriate or by using a paddle.



3. Glycerol is added using a measuring cylinder. As glycerol is very viscous and sticks to the wall of the measuring cylinder, it should be rinsed with some sterile distilled or cold boiled water and then emptied into the bottle/tank.



7. Immediately divide the solution into its final containers (e.g. 500 or 100 ml plastic bottles), and place the bottles in quarantine for 72 hours before use. This allows time for any spores present in the alcohol or the new/reused bottles to be destroyed.

## Final products

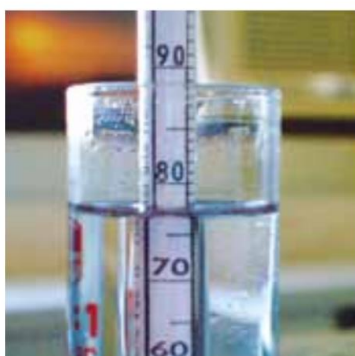
FORMULATION 1	FORMULATION 2
Final concentrations: <ul style="list-style-type: none"><li>• Ethanol 80% (v/v),</li><li>• Glycerol 1.45% (v/v),</li><li>• Hydrogen peroxide 0.125% (v/v)</li></ul>	Final concentrations: <ul style="list-style-type: none"><li>• Isopropyl alcohol 75% (v/v)</li><li>• Glycerol 1.45% (v/v),</li><li>• Hydrogen peroxide 0.125% (v/v)</li></ul>

## Quality control

1. Pre-production analysis should be carried out every time an analysis certificate is not available to guarantee the titration of alcohol (i.e. local production). Verify the alcohol concentration with the alcohol meter and make the necessary adjustments in volume in the preparation formulation to obtain the final recommended concentration.



2. Post-production analysis is mandatory if either ethanol or an isopropanol solution is used. Use the alcohol meter to control the alcohol concentration of the final use solution. The accepted limits should be fixed to  $\pm 5\%$  of the target concentration (75%–85% for ethanol).



3. The alcohol meter shown in this information pamphlet is for use with ethanol; if used to control an isopropanol solution, a 75% solution will show 77% ( $\pm 1\%$ ) on the scale at 25°C.

## General information

Labelling should be in accordance with national guidelines and should include the following:

- Name of institution
- WHO-recommended handrub formulation
- For external use only
- Avoid contact with eyes
- Keep out of the reach of children
- Date of production and batch number
- Use: Apply a palmful of alcohol-based handrub and cover all surfaces of the hands. Rub hands until dry
- Composition: ethanol or isopropanol, glycerol and hydrogen peroxide
- Flammable: keep away from flame and heat

## Production and storage facilities:

- Production and storage facilities should ideally be air-conditioned or cool rooms. No naked flames or smoking should be permitted in these areas.
- WHO-recommended handrub formulations should not be produced in quantities exceeding 50 litres locally or in central pharmacies lacking specialised air conditioning and ventilation.
- Since undiluted ethanol is highly flammable and may ignite at temperatures as low as 10°C, production facilities should directly dilute it to the above-mentioned concentration. The flashpoints of ethanol 80% (v/v) and of isopropyl alcohol 75% (v/v) are 17.5°C and 19°C, respectively.
- National safety guidelines and local legal requirements must be adhered to the storage of ingredients and the final product.

## ANNEX 4: Viability of SARS-CoV-2 on aerosols and different surfaces, and list of disinfectants for commonly contaminated objects

Type of surface / aerosol	Viability	Half-life
Aerosols	Up to 3 hours	1.1-1.2 hours
Stainless steel	Up to 48-72 hours	5.6 hours
Cardboard/paper	Up to 24 hours	3.46 hours
Plastic	Up to 72 hours	6.8 hours
Copper	Up to 4 hours	0.7 hours

Source: (Neeltje van Doremalen, 2020)

The following list was compiled by the Chinese Pharmaceutical Association. For more details, consult the original document (in English), available on the FIP dedicated webpage. (Chinese Pharmaceutical Association, 2020)

Object for disinfection	Type of disinfectant	Consumables
Environmental object surface	Chlorine-containing disinfectant (1000mg/L), chlorine dioxide (500mg/L), 75% alcohol	Disposable absorbent material
Hands	Alcohol-containing quick-drying hand disinfectant, chlorine-containing disinfectant, hydrogen peroxide,	
Skin	0.5% iodine-based disinfectant, hydrogen peroxide	
Mucosa	0.05% iodine-based disinfectant	
Indoor air	Peracetic acid, chlorine dioxide, hydrogen peroxide	
Pollutant	Chlorine-containing disinfectant (5000-20000mg/L), disinfectant powder or bleach powder containing water absorption	
Textiles such as clothes, bedding	Chlorine-containing disinfectant (500mg/L, ethylene oxide	
Prescriptions	Ethylene oxide	



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