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FIP HEALTH ADVISORY

**COVID-19:
GUIDELINES FOR PHARMACISTS
AND THE PHARMACY WORKFORCE**

INTERNATIONAL PHARMACEUTICAL FEDERATION

COVID-19: GUIDELINES 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 the COVID-19 pandemic for pharmacists and the pharmacy workforce, both in a primary care context (i.e. community pharmacies and primary healthcare facilities) and in hospital settings.

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:

- Ensuring adequate storage and supply of 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:

- Ensuring adequate storage and supply of appropriate stocks of relevant medicines and other medical products and devices to supply the demand, including masks, thermometers, goggles and other necessary equipment. Ensuring these products are adequately supplied if not managed by the hospital pharmacy.

- 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.

Pharmacy activities

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 modes 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 - and if necessary, face - 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)

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 1-2m 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, including masks and goggles, 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

During the pandemic, pharmacies should prioritise the dispensing of medicines and medical devices over non-essential products.

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)

Public 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. All pharmacy staff at the counter is encouraged to wear a facial mask for additional protection of both themselves and the public.
3. Keep at the counter only essential objects.
4. Wipe and disinfect the counter after each customer/patient.
5. Have an alcohol-based solution at hand, to disinfect hands after attending to each patient/customer.
6. 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 whenever possible (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. Long hair or beards may reduce the efficiency of masks.
6. Whenever it is necessary to put on a mask and/or goggles, 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 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: Recommendations for the pharmacy staff and the public

Recent research has shown that infectious aerosols can persist in the air for up to three hours (Neeltje van Doremalen, 2020). Aerosol-generating procedures are most likely to occur in a medical care setting and include tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation and bronchoscopy (World Health Organization, 2020). In sneezing or coughing, despite the variety in size, large droplets comprise most of the total volume of expelled respiratory droplets, and these tend to quickly fall to the ground. However, sneezing and coughing could also produce aerosols small enough to linger in the air for some time and be inhaled by others. Nevertheless, this will be affected by a number of factors including gravity, the direction and strength of local airflows, temperature and relative humidity (which will affect both the size and mass of the droplets due to evaporation) (World Health Organization, 2009).

Recommendations for pharmacists and the pharmacy workforce

According to the United States Occupational Safety and Health Administration, pharmacy staff can be considered to be at medium exposure risk for COVID-19, as they have frequent and/or close contact with (i.e., within 6 feet/1.8 metres of) people who may be infected with SARS-CoV-2, but who are not known or suspected COVID-19 patients. In areas/countries without ongoing community transmission, workers in this risk group may have frequent contact with travellers who may return from international locations with widespread COVID-19 transmission. In areas where there is ongoing community transmission, workers in this category may have contact with the general public (e.g., in schools, high-population-density work environments, and some high-volume retail settings). (US Department of Labor - Occupational Safety and Health Administration, 2020)

Considering that transmission has occurred from asymptomatic and/or pre-symptomatic individuals (Ruiyun Li, 2020) and the frequent contact that pharmacists and the pharmacy workforce have with the public (including infected individuals), **it is reasonable to recommend that pharmacy staff wear a face mask to protect themselves from infection, and to avoid further dissemination in case the pharmacy personnel becomes infected themselves.**

Being workers with medium exposure risk, they may need to wear some combination of gloves, a gown, a face mask, and/or a face shield or goggles. However, wearing a mask, use of gloves and eye protection for workers in the medium exposure risk category will vary by work task, the results of the employer's hazard assessment, and the types of exposures workers have on the job. (US Department of Labor - Occupational Safety and Health Administration, 2020)

In any case, it is paramount that pharmacists and the pharmacy workforce further protect themselves from infection by keeping a safe distance of 1-2 metres from patients and members of the public, using the proper personal protective equipment and disinfecting any surfaces that may be touched by patients and members of the public.

Wearing a medical mask is one of the prevention measures to limit spread of certain respiratory diseases, including COVID-19. 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) – this later recommendation referring to healthcare professionals in hospital wards.

For pharmacists working in hospitals and healthcare facilities

In their advisory role on the appropriate and responsible use of pharmaceutical products to the staff of hospital wards, hospital pharmacists should be aware of the recommendations concerning masks.

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](#).

Use of a respirator

- Use 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.

Additionally, and especially during pandemic periods, usual hygiene recommendations should be considered by pharmacists and the pharmacy workforce: short hair or tied-up hair, avoiding long beards, and avoiding the use of jewellery, watches and make up all contribute to better infection prevention and a more efficient use of masks, respirators and goggles.

Recommendations for the public

Concerning the use of masks by the public, as evidence suggests COVID-19 could be transmitted before symptom onset, community transmission might be reduced if everyone, including people who have been infected but are asymptomatic and contagious, wear face masks. However, evidence that face masks can provide effective protection against respiratory infections in the community is scarce. In addition, the use of face masks by the general public exacerbates the global supply shortage of face masks, with prices

soaring, and risks supply constraints to frontline healthcare professionals. (Shuo Feng, 2020)

Meanwhile, health authorities should optimise face mask distribution to prioritise the needs of frontline health-care workers and the most vulnerable populations in communities who are more susceptible to infection and mortality if infected, including older adults (particularly those older than 65 years) and people with underlying health conditions. Notably, improper use of face masks, such as not changing disposable masks, could jeopardise the protective effect and even increase the risk of infection. (Shuo Feng, 2020)

It would also be rational to recommend that people in quarantine wear face masks if they need to leave home for any reason, to prevent potential asymptomatic or presymptomatic transmission. In addition, vulnerable populations, such as older adults and those with underlying medical conditions, should wear face masks if available. (Shuo Feng, 2020)

In summary, FIP recommends that members of the public wear a mask in the following circumstances:

- When taking care of a person with suspected COVID-19 infection.
- When presenting symptoms such as coughing, sneezing or fever.
- If they belong to higher-risk groups, including older adults (particularly those older than 65 years) and people with underlying health conditions when out in public places or in the presence of others.
- When in quarantine (i.e., in preventive isolation following contact with a confirmed or potentially positive case of COVID-19), if they need to leave home for any reason, to prevent potential asymptomatic or pre-symptomatic transmission.

It should be noted that:

- Masks are effective only when used in combination with frequent hand-cleaning with alcohol-based hand rub or soap and water.
- If people wear a mask, then they 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. Before touching the mask, clean hands with an alcohol-based hand rub or soap and water
2. Before putting on the mask, inspect it for tears and holes.
3. Orient which side is the top side (generally where the metal strip or stiff edge is).
4. Ensure the proper side of the mask (usually the coloured side) faces outwards.
5. Place the mask onto your face. Pinch the metal strip or stiff edge of the mask so it moulds to the shape of your nose.
6. Ensure the mask covers your mouth and chin.
7. After use, take off the mask; remove the elastic loops from behind the ears while keeping the mask away from your face and clothes. Avoid touching potentially contaminated surfaces of the mask.
8. Discard the mask in a closed bin immediately after use.
9. 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). Also wash your face if possible.

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

Three Key Factors Required 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.

*If your respirator has a metal bar or a molded nose cushion, it should rest over the nose and not the chin area.

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 1-2 metres from any individual with COVID-19 respiratory symptoms (e.g., coughing, sneezing) and any individual in general when there is community transmission of the disease;
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.

[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 precautions and in the risk assessment, early detection and referral of individuals suspected to be 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 Informação 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"> • No symptoms (cough, fever or breathing difficulties) <p>AND</p> <ul style="list-style-type: none"> • No known recent contact with confirmed or suspected cases of COVID-19 and no recent travel history to affected areas 	<ul style="list-style-type: none"> • Offer reassurance • Highlight preventive measures • Recommend social distancing, home confinement and avoidance of non-essential travelling (domestic and international) whenever possible. • Provide evidence-based information and advice (oral and/or written)
<ul style="list-style-type: none"> • Symptoms (cough, fever or breathing difficulties) <p>AND</p> <ul style="list-style-type: none"> • No known recent contact with confirmed or suspected cases of COVID-19 and no recent travel history to affected areas 	<ul style="list-style-type: none"> • Offer reassurance • Inform that risk of COVID-19 may exist • Whenever possible, isolate the patient in a separate room • Do not physically examine the patient • Reinforce self-protective measures, including the use of an appropriate respirator, gloves and goggles

	<ul style="list-style-type: none"> • Highlight measures to prevent further transmission, including the use of a face mask by the patient • 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 • 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. • Provide evidence-based information and advice (oral and/or written)
<ul style="list-style-type: none"> • No symptoms (cough, fever or breathing difficulties) <p>AND</p> <ul style="list-style-type: none"> • Known recent contact with confirmed or suspected cases of COVID-19 and/or recent travel history to affected areas 	<ul style="list-style-type: none"> • Offer reassurance • Inform that risk of COVID-19 may exist • Recommend social distancing, home quarantine and avoidance of non-essential travelling (domestic and international) for at least 14 days • Recommend tracing contacts history • 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 • Provide evidence-based information and advice (oral and/or written)
<ul style="list-style-type: none"> • Symptoms (cough, fever or breathing difficulties) <p>AND</p> <ul style="list-style-type: none"> • Known recent contact with confirmed or suspected cases of COVID-19 and/or recent travel history to affected areas 	<ul style="list-style-type: none"> • Offer reassurance • Inform that risk of COVID-19 may exist • Whenever possible, isolate the patient in a separate room • Do not physically examine the patient • Reinforce self-protective measures, including the use of an appropriate respirator, gloves and goggles • Highlight measures to prevent further transmission, including the use of a face mask by the patient • 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 • 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. • Provide evidence-based information and advice (oral and/or written)
<ul style="list-style-type: none"> • Unavoidable travel plans to affected areas or contact with confirmed or suspected cases of COVID-19 	<ul style="list-style-type: none"> • Offer reassurance • Inform about the situation and ways of transmission

	<ul style="list-style-type: none"> • Highlight preventive measures (especially frequent hand washing and avoiding touching one’s face) • Highlight self-protection measures, including the use of an appropriate respirator • Provide evidence-based information and advice (oral and/or written)
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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 summary guidance sheet that can be displayed at the pharmacy for the pharmacy personnel (provided as a separate file).

Patient isolation and referral

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 a call to the appropriate emergency services, or the indication for the patient to remain in home confinement, as well as his closest contacts.

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 left the pharmacy, 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 COVID-19 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 advised by medical staff to 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.

Diagnostic testing for COVID-19 in suspected human cases

On 16 March 2020, the Director General of the WHO, Dr Tedros Adhanom Ghebreyesus, stated that “the most effective way to prevent infections and save lives is breaking the chains of transmission. And to do that, you must test and isolate. You cannot fight a fire blindfolded. And we cannot stop this pandemic if we don’t know who is infected. We have a simple message for all countries: test, test, test.” (Ghebreyesus, 2020)

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

Some serological assays are also in development, but currently they cannot compete in accuracy with molecular diagnosis, particularly in the early phase of infection. This is particularly true for patients who are immunocompromised, and in the elderly. This lack of equivalency is also true in terms of analytical performance.

If asked to set up a diagnostic method, clinical laboratory staff should inquire about the applicable recommendations and requirements from their national health authorities. The following link has a comprehensive list of the diagnostic options available and in the pipeline for SARS-CoV-2: <https://www.finddx.org/covid-19/pipeline/>

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.

The first “rapid” (point of care) testing devices are entering the market at the end of March. Currently, 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.

Some governments, [like in the UK](#), have advised against the use of such rapid tests in the community, including at pharmacies, because there is no published evidence of the reliability and suitability of these tests for now, for diagnosing COVID-19 infection in a community setting.

Nevertheless, due to the limited capacity in some countries in terms of testing equipment and facilities, some regulatory agencies (like the [US Food and Drug Administration](#)) and Governments (such as in [Spain](#), [China](#), [Italy](#) and [Japan](#)) have approved and/or purchased rapid tests to expand the diagnostic capacity required during the epidemic.

After nasopharyngeal sampling (either by 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, with recent developed tests taking less than three hours.

It is recommended to establish priority ranking criteria for testing in case the demand for diagnostic testing may exceed local laboratory capacity, and triaging of requests might be required. Such priority rules should be established in agreement with, or following the guidance of national or regional competent authorities.

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.

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 Persons for Coronavirus Disease 2019 \(COVID-19\)](#). (Centers for Disease Control and Prevention, 2020).

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, analgesics, and in hospitals, corticosteroids and several other categories of medicines. Supply of medical devices (including thermometers, masks, and, in hospital, other protective equipment items (e.g., respirators, gloves and goggles) should be adequately ensured.

See the FIP Guidelines “COVID-19: Clinical information and treatment guidelines” (available at www.fip.org/coronavirus) and 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.

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 (UVC) 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. This also applies to goggles.

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)

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%20to%20Local%20Production.pdf)

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 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](#).

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. Self-discipline for avoiding any skin contact and refraining from touching one's face should also be reminded.

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)

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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 α -2a injection: 3 million IU, 5 million IU; Recombinant human interferon α -2b injection; Recombinant human interferon α -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, mostly in hospital settings</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	UVC Lamp
		Air steriliser
		Body temperature measuring equipment
		High-pressure steam steriliser
	Optional	Transfer box
Personal protective equipment	Essential	Intelligent distribution equipment
		Medical protective mask
		Disposable work cap
		Disposable gloves
	Optional	Coverall
		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"> Ethanol 96% Hydrogen peroxide 3% Glycerol 98% Sterile distilled or boiled cold water 	<ul style="list-style-type: none"> Isopropyl alcohol 99.8% Hydrogen peroxide 3% Glycerol 98% Sterile distilled or boiled cold water

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

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

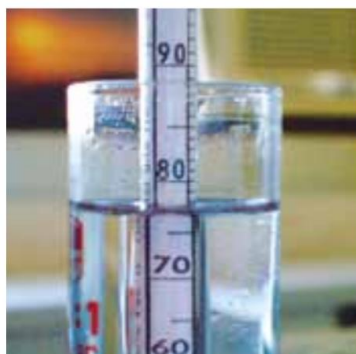
FORMULATION 1	FORMULATION 2
Final concentrations: <ul style="list-style-type: none">• Ethanol 80% (v/v),• Glycerol 1.45% (v/v),• Hydrogen peroxide 0.125% (v/v)	Final concentrations: <ul style="list-style-type: none">• Isopropyl alcohol 75% (v/v)• Glycerol 1.45% (v/v),• Hydrogen peroxide 0.125% (v/v)

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	

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 26 March 2020 according to newly available evidence.

Disclaimer

This document is based on the available evidence and the recommendations of reputable organisations such as the World Health Organization, the United States and the European Centres for Disease Control and Prevention, and others, as cited at the time of publishing. The available knowledge about COVID-19 is rapidly changing and such recommendations may change accordingly. Although FIP will strive to keep these guidelines up-to-date, we recommend consulting the websites of these organisations and any newly available evidence for the most recent updates.

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