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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, causing millions of cases and hundreds of thousands of deaths. COVID-19 is the disease caused by the new virus SARS-CoV-2. The virus is easily transmitted in the community via respiratory droplets, direct contact with an affected individual or via surfaces which may have been contaminated. While most people who are infected only experience mild to moderate symptoms that can be managed, up to 20% of affected individuals develop more severe illness requiring hospital treatment. Individuals at higher risk of severe illness are older adults, people with underlying conditions, and those with acquired or congenital immunodeficiency. The large number of COVID-19 patients requiring hospital care or even intensive care has placed significant burden on health systems and healthcare professionals all over the world. It has led most countries to implement exceptional measures to contain the spread of the virus, including extensive lockdowns, emergency protocols and social distancing measures. All health professions, including pharmacists, are called upon to play a crucial role in managing and controlling this pandemic.

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) and in 2012 with MERS-CoV (Middle East Respiratory Syndrome Coronavirus). Even in the current pandemic, several countries have successfully controlled the outbreak so far. 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 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, evidence-based advice. 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 both in normal circumstances and during times of crisis or emergencies, such as the COVID-19 pandemic. As medication experts, community pharmacists also have a role to ensure safe and effective medication therapy, and they also answer questions from prescribers about medicines.

In addition, community pharmacists have the responsibility of:

- Ensuring adequate procurement, storage and supply of appropriate stocks of relevant medicines and other medical products and devices to supply the demand, including masks, thermometers and/or other necessary equipment;
- Supporting the continuity of treatments and the responsible use of medicines, including appropriate adherence to treatments. This is especially relevant for people living with long-term conditions, as well as confined or isolated patients;
- Following and contributing to national and/or local strategies for controlling the pandemic, which may include exceptional measures for ensuring rational access to medicines and medical devices, changes to dispensing regulations, planned distribution of personal protective equipment, among others;
- Informing and educating the public;
- Counselling;
- Referring;
- Promoting disease prevention;
- Promoting infection control;
- Vaccinating (where allowed); and
- Compounding hand sanitiser when necessary.

Some examples of exceptional services offered by pharmacists during the COVID-19 pandemic are listed below.

In some countries or territories, 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.

Australia

Electronic prescribing is being fast-tracked as part of the National Health Plan for COVID-19. (1)

The Australian Government is implementing changes to allow community pharmacists to substitute specific medicines without prior approval from the prescribing doctor in certain situations where a medicine is unavailable at the time of dispensing. (2)

Vulnerable people and people in self-isolation will be able to order their Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS) prescriptions remotely and have their medicines home-delivered to reduce their potential exposure to COVID-19. (3)

Canada

During the COVID-19 pandemic, Health Canada issued temporary exemptions for prescriptions of controlled substances, which permit pharmacists to extend, transfer and accept verbal orders, change drug formulation, dose and regimen, etc and permit pharmacy employees to deliver prescriptions. (4)

Pharmacists may obtain a specimen from the pharynx (Quebec), provide virtual counselling, temporarily provide virtual telephone assessments in order to prescribe (Manitoba), provide reimbursed patient assessments, information and care related to COVID-19 (\$20/claim, maximum of five claims per pharmacy per day) (Alberta), and may provide many different virtual services (medication reviews, medication counselling, witnessing the ingestion of opioid agonist treatment, demonstrating the use of a medical device, and deprescribing consultations). (5)

Italy

Through a protocol with the Italian Red Cross, Italian community pharmacies ensured the home delivery of medicines to patients who could not (or should not) leave their homes during the lockdown. (6)

Portugal

Community pharmacies started dispensing hospital/specialty medicines for patients suffering from HIV, cancer, multiple sclerosis or other diseases so that patients can access their medicines without having to go to a hospital. This service also assures the delivery of medicines at home and pharmaceutical counselling. (7)

Spain

Victims of domestic abuse can use a codeword (“Mask19”) at the pharmacy to summon police help during the lockdown. (8)

The General Council of Pharmaceutical Colleges proposed to the Ministry of Health the distribution of masks at no profit by community pharmacies. (9)

Uganda

In areas where access to soap and clean water for hand hygiene is not always granted, a group of health care students from various disciplines have developed promotional materials on key moments of hand hygiene to prevent disease transmission, and developed a method for obtaining ethanol from sorghum, a common local plant, to produce hand sanitiser. (10)

UK

Scottish Health Boards may provide access to the Emergency Care Summary data set to pharmacists and pharmacy technicians as part of their Covid-19 response. (11)

Exceptional legislation was also passed to allow pharmacists to provide emergency supply of a controlled drug without a prescription or in situations of shortage (under specific conditions). (12)

USA

Licensed pharmacists were authorised to order and administer rapid COVID-19 tests to patients. (13)

The State of New York empowered pharmacists to vaccinate against COVID-19 when a vaccine becomes available. (14)

The American Pharmacists' Association has urged health insurers and pharmaceutical benefit managers to immediately remove/waive any administrative barriers. (15)

Responsibilities and role of hospital pharmacy

Hospital pharmacists play an important role in:

- Ensuring adequate procurement, storage and supply of appropriate stocks of relevant medicines and other medical products and devices to supply the demand, including masks, thermometers and/or 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, e.g., ensuring that healthcare professionals wear their masks appropriately and know how to take them off correctly to avoid contamination;
- Ensuring patient safety related to compounded sterile preparations in the context of any medical supply shortages (e.g., face masks, gowns, gloves);
- Compounding hand sanitiser when necessary; and
- 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.

In China, Song and colleagues echoed the importance of pharmacists' clinical role during the pandemic and described a framework for pharmaceutical care for hospitalised patients with COVID-19 in which recommendations are made regarding multiple themes, such as evidence-based treatment options, management of drug interactions, and therapy monitoring. (16)

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

Pharmacy activities

Pharmacy staff

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.

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 and among themselves. Therefore, it is recommended that the entire pharmacy team be trained in, and receive regular updates on:

- 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, proper hand hygiene and handling of personal protective equipment;
- Information on how to proceed in a suspected case, including strategies that each pharmacy should implement; and
- Materials available to support the intervention (information brochures, intervention flow charts and accurate information websites). (17)

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 personnel.

Pharmacy team

Measures should be taken to ensure continuity of pharmacy activities while minimising the risk of contamination. Examples of measures include dividing personnel into different shifts (for example, one team in the morning and the other at night or on alternating days), reorganising the workspace to maintain safe distances as much as possible, and establishing disinfecting procedures and schedules.

If there is a confirmed case of COVID-19 among the pharmacy staff, all staff members who had close contact with the infected colleague (in the same shift, for example) should be followed up as potentially infected and may be required to remain isolated for two weeks according to local public health recommendations. Pharmacy operations would have to be adapted if a staff member were to isolate, including changes to scheduling and pharmacy working hours.

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.

It might be important to develop an information system by which the pharmacy service can be assessed in specific areas (region, town, neighbourhood etc) in case of closures or shorter opening times.

Patient/customer service

In order to ensure the continuity of the supply of medicines and services (and particularly in communities where there is only one pharmacy in a certain area, which may vary from

country to country), contact with patients/customers should be minimised through different measures.

Various methods can be put into place to reduce the number of individuals at a single time inside the pharmacy. Online prescription refill ordering, electronic prescriptions, home delivery, kerb-side pick-up, and telepharmacy for counselling and education are several examples. Medicines may also be dispensed through a small window on the facade or door.

If possible, a dedicated staff member may be present at the entrance to triage patients who may be at a greater risk of being infected (recent travel, recent contact with infected individuals, presentation of symptoms).

Inside the pharmacy, a transparent plastic shield or divider can be placed on the counter or in front of the dispensing area. There should be clear marks on the floor to indicate the direction in which customers should navigate inside the pharmacy as well as to indicate the 1 to 2 meter distance between customers and staff. If pharmacy staff are required to leave the dispensing area to counsel patients, they should be advised to use appropriate personal protective equipment.

Medicines supply

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

Where appropriate, medicines should be delivered to pharmacies without the courier entering the premises (or at least the non-public areas). 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 some 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. This service should be complemented with a follow-up call with the patient or carer to ensure optimal use of the medicines. The home delivery service should not be provided without the appropriate pharmaceutical care. Digital health tools and educational materials may also be used to assist in patient counselling and education.

In the case of home delivery, the person in charge of the actual delivery should avoid any direct contact with the patient as well as their personal objects and must be adequately protected. 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 to 2 metres while visually ensuring that medicines are collected by the patient or an authorised person.

The Italian Federation of Community Pharmacy Owners (FEDERFARMA) and the Spanish General Pharmaceutical Council established partnerships with their countries' national offices of the Red Cross for a free delivery service 24 hours a day for patients older than 65 years or in quarantine or home confinement. (18) (19)

If needed, community pharmacies may collaborate with hospitals in delivering necessary medicines. (20)

Public areas

1. Restrict access to products on self-selection by customers to avoid multiple people touching these products. Whenever possible, products should be accessed only by pharmacy personnel.

2. Frequently clean and disinfect all patient service counters and patient contact areas. Discontinue the use of magazines and other shared items in pharmacy waiting areas.
3. Limit the number of patients in the pharmacy at any given time to prevent crowding at the pharmacy counter or checkout areas. In case this limit is reached, 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.

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. (Have a disinfectant available for them at the entrance.)
2. Make sure you keep a distance of 1–2 metres between you and other customers or the pharmacy staff.
3. Do not walk outside the floor markings.
4. If you sneeze or cough, cover your nose and mouth with a handkerchief (which you should discard immediately) or cough/sneeze into your elbow.
5. Avoid shaking hands while in the pharmacy.
6. Have the prescriptions you need filled ready.
7. Respect the limit of number of patients inside the pharmacy at a given time.

Post signs at the door instructing patients with fever, respiratory symptoms, or other symptoms of COVID-19 not to enter the pharmacy and to call the contact emergency number or hotline. Patients should also be advised to follow the appropriate instructions if they have had known recent contact with confirmed or suspected cases of COVID-19 and/or recent travel history to affected areas.

At the counter

1. Whenever possible, allocate one employee per station or location at the counter and avoid swaps. Try not to share offices and office supplies, such as pens and staplers.
2. Ensure all pharmacy staff at the counter wear a face mask. Face shields may also be used (in combination with masks), especially if counter-top plastic shields are not available.
3. Keep only essential objects at the counter.
4. Wipe and disinfect the counter and payment terminals after each customer or patient.
5. Have an alcohol-based solution available to disinfect hands after attending to each patient or customer. Avoid touching objects that have been handled by patients.
6. Where possible, encourage patients to order their medicines through the pharmacy's webpage or other electronic communication methods (depending on the jurisdiction) and have them delivered to their home or work place. As stated above, this service should not be provided without the appropriate pharmaceutical care by telepharmacy (by phone or internet call).
7. Avoid handling insurance or benefit cards. Instead, have the patient take a picture of the card for processing or read aloud the information that is needed (where possible).

Social distancing

1. Limit the number of patients/customers entering the pharmacy at any one time.
2. Establish a safe distance of at least 1–2 metres (preferably more) when attending to a patient.
3. If necessary, use a tray 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 1-2 metres between them while waiting, and use marking tape on the floor to indicate where they may stand;

Advice for patients and customers

Advise patients and customers to:

1. Avoid long stays in the pharmacy.
2. Avoid visiting the pharmacy if they are elderly or have co-morbidities. Wherever possible, such patients should ask a family member, a caretaker, a friend or a neighbour to go to the pharmacy instead of them if telephone or online refill requests cannot be made. (21)

Recommendations for pharmaceutical services and activities in the pharmacy

1. Point-of-care tests (measurement of blood pressure, cholesterol, glycaemia), pregnancy tests, and 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 face shield combined with a mask, gloves and goggles if appropriate.
2. Such services may need to be restricted or interrupted if they represent a potential risk to the health of the team (e.g., for patients with symptoms of respiratory infection).

Recommendations for the pharmacy team

1. Employees with diseases that compromise their immune system should use masks at all times and preferably perform back office tasks. Hand hygiene measures should be reinforced.
2. Personnel with symptoms or with recent contact with suspected or positive COVID-19 patients should stay at home and seek testing for possible COVID-19 infection.
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 should be covered or cut off/trimmed whenever possible, as may reduce the efficiency of masks.
6. When donning or doffing a mask and/or goggles, hygiene and disinfection of the hands should be performed before and after.
7. Frequently touched objects and surfaces, such as workstations, keyboards, telephones and doorknobs should be cleaned and disinfected frequently. A cleaning protocol should be in place and enforced.
8. The safe use, manipulation, and disposal of PPE should be instructed to personnel.

Preventive measures

Pharmacists and the pharmacy workforce can play a key role in preventing the spread of COVID-19 by:

1. Understanding the nature of the disease, how it is transmitted, and how to prevent it from spreading further;
2. Knowing how to access their national level information sources regarding COVID-19 strategies (including the closest referral healthcare centre and contact emergency number or hotline for COVID-19), and by keeping their knowledge up to date;
3. Informing, advising and educating the community, also with digital tools;
4. Supplying appropriate products; and
5. Encouraging individuals and families to follow national recommendations with regard to the necessary precautions to take for suspected cases of COVID-19.

Primary care centres, pharmacies and 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 appropriate facilities for the treatment or management of COVID-19 patients.

Endeavouring to treat patients in inadequate environments may put healthcare professionals and others at risk.

The following measures should be considered by the pharmacy management (22):

1. Develop emergency plans and workflow;
2. Carry out full staff training;
3. Focus on the health status of pharmacists and pharmacy staff, also with regard to their stress and mental health;
4. Protect pharmacy personnel;
5. Strengthen pharmacists' infection monitoring capacity;
6. Ensure adequate cleaning and disinfection management;
7. Implement patient triage and counselling procedures;
8. Strengthen patient education;
9. Strengthen infection exposure management; and
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 pharmacy staff and the public

The use of masks is part of prevention and control measures that can limit the spread of certain respiratory viral diseases, including COVID-19. Masks can be used either for the protection of healthy persons (worn to protect oneself when in contact with an infected individual) or for source control (worn by an infected individual to prevent onward transmission).

Current evidence suggests that most transmission of COVID-19 is occurring from symptomatic people to others in close contact, when not wearing appropriate PPE or by contact with surfaces used by or near infected people. There is also the possibility of pre-symptomatic transmission by individuals who have been infected and shedding virus but who have not yet developed symptoms. In very specific situations, transmission may also occur through aerosols, something most commonly associated with aerosol-generating procedures that mainly occur in medical care settings.

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). (23)

The latest recommendations from the World Health Organization (WHO) on use of masks from June 2020 (24) conclude the following:

- Health workers providing direct care to COVID-19 patients should wear a medical mask of the correct specification (in addition to other PPE that is part of droplet and contact precautions).
- In care settings for COVID-19 patients where aerosol-generating procedures are performed (e.g., COVID-19 intensive and semi-intensive care units), the WHO recommends that health workers should wear a fitted respirator mask.
- The general public should also be encouraged to use masks (medical or non-medical) to help prevent transmission.

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 and respirators.

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

PPE recommendations for pharmacists

Pharmacists and 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. (25) Considering that transmission has occurred from asymptomatic and pre-symptomatic individuals (26) and the frequent contact that pharmacists and the pharmacy workforce have with the public (including infected individuals), they may need to wear some combination of gloves, a gown, a face mask, and a face shield or goggles. However, wearing a mask and the 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. (25)

Pharmacists and pharmacy staff must protect themselves from COVID-19, and this should include a workplace risk assessment to determine the risk of COVID-19 and how best to manage each risk. Risk management should be based on the standard hierarchy of controls which include (from most effective to least effective): elimination (removing the hazard, e.g., using signage to screen patients for COVID-19, advising those who are potentially unwell not to enter the pharmacy), substitution (replacing the hazard), engineering controls (isolating people from the hazard, e.g., use of Perspex barriers to prevent close face to face contact), administrative controls (changing the way people work, e.g., new processes to minimise contact between people); and PPE. PPE requirements will depend on local circumstances as well as individual risk level. Below is a suggestion of what PPE should be considered. However this should be modified to suit the situation, and individual and official local guidance.

Pharmacies thinking about using PPE should consider having a PPE steward to help determine PPE supply needs, item specifications, individual staff risks, training and monitoring safe use of PPE.

Community pharmacy

Pharmacy staff who are not in close contact with patients or other staff are unlikely to be exposed to droplets so PPE is not required. However it is recommended that all staff wear a mask to avoid disease transmission in case pharmacy personnel become infected.

Pharmacy staff who are unable to maintain a 2m distance from customers should wear facemasks in accordance with the WHO recommendations for medical masks for healthcare workers. Sessional use of face masks is an option for these pharmacy staff. The use of PPE should be supplemented with frequent handwashing as well as higher level controls (elimination, substitution, engineering and administrative controls). Pharmacies should consider having all staff wear facemasks.

Additional PPE, including gloves, gowns, eye protection and masks, may be required if there is the chance staff will have *close* contact with suspected or confirmed cases. For example, a full set of PPE may be kept if the pharmacy has a quarantine room for suspected cases, and any staff who may need to interact with these patients should be trained on how to safely put on and take off PPE.

Hospital pharmacy

For staff working in hospital pharmacy dispensary situations the same guidance as for community pharmacy should be applied. For staff working on or attending wards, PPE should be in line with recommendations for the area in which they are working. This is likely to include a gown, gloves, eye protection and either a medical mask or respirator (in areas where aerosol-generating procedures occur). PPE at ward level may either be

sessional or per patient depending the situation. All staff wearing PPE should be trained how to safely put on and take off the relevant PPE and, if respirators are required, staff must understand how to fit these properly.

Recommendations for the public

Evidence suggests COVID-19 could be transmitted before symptom onset, so community transmission might be reduced if everyone, including people who have been infected but are asymptomatic and contagious, wore face masks. However, evidence that face masks can provide effective protection against respiratory infections in the community is scarce. In addition, the use of medical grade 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. (27) An alternative to medical level face masks is the use of cloth masks for the general public. These masks can be worn by asymptomatic members of the public to help stop the spread of disease. However, it should be noted that there is insufficient evidence to show that masks prevent the wearer from becoming infected. Notably, improper use of face masks, such as not changing disposable masks, could jeopardise the protective effect and even increase the risk of infection. (27)

Meanwhile, health authorities should optimise face mask distribution to prioritise the needs of frontline healthcare workers. It would also be rational to recommend that people in quarantine wear face masks if leaving home is unavoidable, to prevent potential asymptomatic or pre-symptomatic transmission. In addition, vulnerable populations, such as older adults and those with underlying medical conditions, should wear medical face masks if available. (27)

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 those with underlying health conditions, when out in public places or in the presence of others; and
- When in quarantine (i.e., in preventive isolation following contact with a confirmed or potentially positive case of COVID-19), if leaving home is unavoidable, to prevent potential asymptomatic or pre-symptomatic transmission.

Consideration should be given to members of the public wearing non-medical facemasks, particularly in areas in which social distancing is not possible, such as public transport.

It should be noted that:

- Masks are effective only when used in combination with frequent hand-cleaning with appropriate alcohol-based hand rub or soap and water; and
- If people wear a mask, they must know how to use it and dispose of it properly. (28)

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 positioning the elastic loops behind your ears. 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 nose, 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 disposable mask in a closed bin immediately after use. Fabric masks can be washed by hand with water and soap or with the laundry.
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 (29). 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.

CDC **NIOSH**

*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 Krah 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 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.

Wearing a medical mask is one of the preventive measures that can limit the spread of certain respiratory viral diseases, including COVID-19. However, the use of a mask alone is insufficient to provide an adequate level of protection, and other measures should also be adopted. (24)

[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*. \(30\)](#)

Recommendation for outpatient care

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

- Triage and early recognition as well as testing and tracing contacts;

- Emphasis on hand hygiene, respiratory hygiene and medical masks;
- Appropriate use of contact and droplet precautions for all suspected cases;
- Prioritisation of care of symptomatic patients;
- Ensuring a separate waiting area for symptomatic patients who are required to wait; and
- Educating patients and families about the early recognition of symptoms, basic precautions to be used and which health care facility they should refer to. (31)

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 COVID-19 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 suspected 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 their closest contacts.

The isolation room at a 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 (e.g., 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, on 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." (32)

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 for 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 entered the market at the end of March 2020. Currently, most community pharmacies must refer patients under investigation to their local or national health authorities, which determine where patients should be directed for both nasopharyngeal sampling and COVID-19 (SARS-CoV-2) diagnostic testing. There is limited community pharmacy-based testing being conducted around the world. Pharmacists should use caution as the reliability of point-of-care tests may not yet be sufficient to eliminate the need for full-laboratory 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 currently little published evidence of the reliability and suitability of these tests, in diagnosing COVID-19 infection in a community setting.

Nevertheless, due to the limited capacity of testing equipment and facilities in some countries, 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 pandemic.

After collecting a patient sample (either by nasopharyngeal sampling, deep nasal swabbing, throat swabs, and/or nasopharyngeal aspirate), clinical laboratories can produce results in three to six hours. Recently developed tests take less time than older tests. While such sampling is performed by qualified nursing or medical staff, in some jurisdictions, pharmacists have been authorised to perform such testing,

It is recommended to establish priority ranking criteria for testing in case the demand for diagnostic testing exceeds local laboratory capacity and triaging of requests is 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 can be found [here](#).

Due to the potential for clinical laboratory staff to be exposed to symptomatic and asymptomatic patients during sampling of biologic liquids, every effort to protect staff from the contagion should be made. All recommendations for protection should be in line with the respective national health authority (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 USA Centers for Disease Control and Prevention website: [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

To prevent and control disease during the COVID-19 pandemic, 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 as well as to adjust the inventory as needed to guarantee the continued supply for clinical practice.

The list includes antiviral medicines, antimicrobial agents, antipyretics and analgesics. Lists generated for use in hospital have all of these medication classes as well as additional categories of medicines such as corticosteroids. Supply of medical devices, such as thermometers, masks and other personal protective equipment (e.g., respirators, gloves, goggles) should be adequately ensured.

For more information, see the FIP Guidelines “COVID-19: Clinical information and treatment guidelines” (available at www.fip.org/coronavirus). For a list of key facilities, equipment and personal protective equipment, developed by the Chinese Pharmaceutical Association, see [Annex 1](#).

In situations of home confinement of patients or persons under quarantine, the role that pharmacies play in ensuring this access extends beyond medicines just for the treatment of COVID-19 and can include treatments and maintenance therapies for 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). (33)

Many disinfectants are active against enveloped viruses, such as the COVID-19 virus, including commonly used hospital disinfectants. Currently, the WHO recommends using:

- Ethyl alcohol 70% to disinfect small areas between uses, such as reusable dedicated equipment (for example, thermometers); and
- Sodium hypochlorite 0.5% (equivalent to 5,000ppm) for disinfecting surfaces.

Kampf and collaborators have concluded from the analysis of 22 studies that human coronaviruses such as SARS-CoV, MERS-CoV or endemic human coronaviruses 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. (34)

It is not certain how long the virus that causes COVID-19 survives on surfaces, but it seems likely that it behaves like other coronaviruses. A recent review of the survival of human coronaviruses on surfaces found large variability, ranging from two hours to nine days. (20)

Pharmacy staff should clean and disinfect the working environment and associated articles and equipment frequently in accordance with relevant cleaning and disinfection guidelines and regulations. (22)

For a list of disinfectants and their application to commonly contaminated objects, see [Annex 2](#).

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, lowers their numbers and the risk of spreading infection.
- **Disinfecting** refers to the use of 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. (35)

Infection control: other precautions

1. Practise respiratory hygiene. Everyone should do this, 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. 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.
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 and 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). (36)

8. Clean clothes, bedclothes, and 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.
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. (37)

A useful document to consult for general guidance on the prevention and control of outbreaks of respiratory diseases was produced by the WHO and is available [here](#). (38)

Infection control: hand washing and hand rubbing

Pharmacies can 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 as per the procedure described in WHO's brochure "[Hand Hygiene: Why, How and When](#)" 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

Pharmacy as an information resource

Pharmacists and their associations can 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 can also organise question-and-answer sessions in the community (schools, community centres, etc.).

FIP has 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 FIP's member organisations and other relevant organisations in several languages. This repository is being continually updated.

In addition, FIP has developed an extensive programme of online events to share guidance and best practices on COVID-19, as well as advocacy resources for our member organisations.

FIP also has a Facebook group for pharmacists around the globe ([COVID-19 and pharmacy](#)).

Addressing travel concerns

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

Because the transmission of COVID-19 virus has been increasing around the world, it is prudent for travellers who are sick to cancel or delay travel to affected areas, particularly elderly travellers and people with chronic diseases or underlying health conditions.

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

1. Consult national travel advice and 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 contact with them is unavoidable, wear a surgical mask and continue to do so until 14 days after returning to your country;
3. Perform hand hygiene frequently, particularly after contact with respiratory secretions. Hand hygiene includes either cleaning hands with soap and water or with an alcohol-based hand rub. Alcohol-based hand rubs are preferred if hands are not visibly soiled; wash hands with soap and water when they are visibly soiled;
4. Cover your nose and mouth with a flexed elbow or paper tissue when coughing or sneezing, dispose of the tissue immediately and perform hand hygiene;
5. Refrain from touching the mouth and nose;
6. Follow travel recommendations regarding the use of face masks;
7. Avoid visiting hospitals. If it is necessary to visit a hospital, wear a surgical mask and observe strict personal and hand hygiene;
8. Avoid touching animals (including game), poultry/birds, and their droppings;
9. Avoid visiting wet markets, live poultry markets and farms;
10. Do not consume game meat and do not visit food premises where game meat is served;
11. 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 washed, peeled or cooked;
12. If feeling unwell when travelling, especially if experiencing a fever or cough, wear a surgical mask, inform the responsible staff and seek medical advice at once; and
13. After returning to your country, consult a medical professional promptly if you experience 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 emphasised.

If a person has 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 preventing the 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. (39)

Temperature screening alone, at exit or entry, is not the only effective way to stop international spread since individuals may be in the incubation period, may not show apparent symptoms early on in the course of the disease, or may have a fever that is disguised through the use of antipyretics; in addition, such measures require substantial investment in something that may bear little benefit. It is more effective to provide prevention recommendation messages to travellers and to collect health declarations at arrival points, with travellers' contact details, to allow for a proper risk assessment and the possible contact tracing of incoming travellers.

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ANNEX 1: List of key facilities, equipment, and personal protective equipment using during COVID-19 infections

Classification		Name
Equipment	Optional	Perspex screening
		Tape or other marking material
		Passive screening poster
		Infrared thermometer for temperature screening
		Cleaning materials (usual)
		Disinfectant suitable for surfaces to be cleaned.
		Alcohol-based hand sanitiser
Personal protective equipment*	Essential if closer than 2m to patient	Medical mask (WHO recommended standard for healthcare professionals)
	Optional if closer than 2m to patient	Eye protection (face shield or goggles)
		Gown (water resistant, consult WHO COVID-19 disease commodity package for suitable specification guide)
		Non-sterile examination gloves (consult WHO COVID-19 disease commodity package for specification guide)
	Essential if working in an area where aerosol-generating procedures are carried out.	Respirator (N95 or FFP2 or above)
		Eye protection (face shield or goggles)
		Gown (water resistant, consult WHO COVID-19 disease commodity package for suitable specification guide)
		Non-sterile examination gloves (consult WHO COVID-19 disease commodity package for specification guide)

*Consult local guidelines

ANNEX 2: Viability of SARS-CoV-2 in aerosols and on 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 72 hours	5.6 hours
Cardboard/paper	Up to 24 hours	3.5 hours
Plastic	Up to 72 hours	6.8 hours
Copper	Up to 4 hours	0.7 hours

Source: (40)

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. (22)

Object for disinfection	Type of disinfectant	Consumables
Environmental object surface	Chlorine-containing disinfectant (1,000mg/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 (5,000-20,000mg/L), disinfectant powder or bleach powder	
Textiles such as clothes, bedding	Chlorine-containing disinfectant (500mg/L)	

ANNEX 3: WHO guide to local production of handrub formulations

Source: [Guide to Local Production: WHO-recommended Handrub Formulations](#) (41)

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:

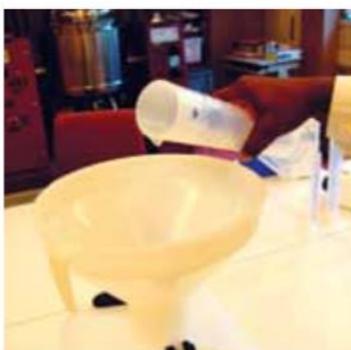


1. The alcohol for the formula to be used is poured into the large bottle or tank up to the graduated mark.



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

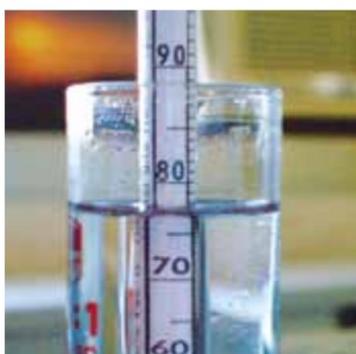
FORMULATION 1	FORMULATION 2
Final concentrations: <ul style="list-style-type: none">• Ethanol 80% (v/v),• Glycerol 1.45% (v/v),• Hydrogen peroxide 0.125% (v/v)	Final concentrations: <ul style="list-style-type: none">• Isopropyl alcohol 75% (v/v)• Glycerol 1.45% (v/v),• Hydrogen peroxide 0.125% (v/v)

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.

Validity

This document was initially prepared based on commonly accepted evidence as of 5 February 2020. It was updated on 14 July 2020 in accordance with 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 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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