ADVANCING PHARMACY WORLDWIDE

FIP HEALTH ADVISORY

CORONAVIRUS SARS-CoV-2 OUTBREAK:
Information and interim guidelines for pharmacists and the pharmacy workforce

INTERNATIONAL PHARMACEUTICAL FEDERATION

Coronavirus SARS-CoV-2 outbreak:

Information and interim guidance for pharmacists and the pharmacy workforce

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

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Purpose of this document

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

Coronavirus infections can be prevented and an outbreak can be stopped through the active engagement of decision-makers, healthcare professionals, the media and the community, as 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 countries are often the first point of contact with the health system for those with health-related concerns or simply in need of information and reliable advice.

Community pharmacists have the shared responsibility of:

- Storing appropriate stocks of pharmaceutical products (medicines, masks, etc) to supply the demand
- Informing and educating the public
- Counselling
- Referring
- Promoting disease prevention
- Promoting infection control

Responsibilities and role of hospital pharmacy

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

- Storing appropriate stocks of relevant medicines and other medical products and devices to supply the demand
- Collaborating with other healthcare professionals in providing patient care and support
- In-hospital prevention and infection control
- Informing and counselling
- Ensuring the responsible use of the pharmaceutical products supplied. For example, ensuring that healthcare professionals consistently wear their masks correctly.

Coronavirus outbreak

What is a coronavirus?

Coronaviruses (CoVs) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). A novel coronavirus (nCoV) is a new strain that has not been previously identified in humans.

Coronaviruses are zoonotic, meaning they are transmitted between animals and people. Detailed investigations found that SARS-CoV was transmitted from civet cats to humans

and MERS-CoV from dromedary camels to humans. Several known coronaviruses are circulating in animals that have not yet infected humans.

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

Coronaviruses usually affect mammals and birds, causing a variety of lethal diseases. In general, coronaviruses cause widespread respiratory, gastrointestinal and central nervous system diseases in humans and other animals, threatening human health and causing economic loss from mild upper to lower respiratory tract infections. (Li, 2016)
Coronaviruses are capable of adapting to new environments through mutation and recombination with relative ease. (Li, 2016) As such, they can affect new hosts and tissues.

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

What is the SARS-CoV-2 coronavirus outbreak?

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

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

On 11 February 2020, the WHO finally decided to name the virus as **severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)**, and the disease caused by this virus as **COVID-19** (for **Co**rona**vi**rus **d**isease identified in 20**19**).

How is SARS-CoV-2 coronavirus transmitted?

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

a. Most often, spread from person to person among close contacts (about 6 feet/1.8 metres).
b. Person-to-person spread is thought to occur mainly via respiratory droplets produced when an infected person coughs or sneezes, similar to how influenza and other respiratory pathogens spread.
c. These droplets can land in the mouths, noses or eyes of people who are nearby or possibly be inhaled into the lungs.
d. It is currently unclear if a person can get SARS-CoV-2 by touching a surface or object that has the virus on it (fomites) and then touching their own mouth, nose or possibly their eyes.

e. Typically, with most respiratory viruses, people are thought to be most contagious when they are most symptomatic (the sickest). With SARS-CoV-2, however, there have been reports of spread from an asymptomatic infected patient to a close contact. (Centers for Disease Control and Prevention, 2020) (Rothe, 2020)

How is SARS-CoV-2 coronavirus NOT transmitted?

Although the knowledge of the novel coronavirus is still limited, it is very unlikely that transmission can occur from:

a. Objects or surfaces that were contaminated with or exposed to the virus, after a short period of time. Concerns about parcels shipped from areas with disease cases are highly unfounded, considering the time that such parcels require to reach their destination. This being said, there is yet no evidence about the resilience of the novel virus strain on surfaces and objects.
b. Thoroughly cooked and properly handled foods.

SARS-CoV-2 Acute Respiratory Disease – clinical information

Onset

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

Note: If a person has been exposed to the virus but has not developed symptoms within 14 days, they can be considered as not infected.

Symptoms

For confirmed SARS-CoV-2 infections, reported illnesses have ranged from people with little to no symptoms to people being severely ill and dying. Symptoms can include (on admission to hospital) (Nanshan Chen, 2020):

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

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

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

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

Treatment

Currently, there is no specific medicine or vaccine for coronavirus SARS-CoV-2 and no medicines or vaccines have been fully tested for safety and efficacy. Since Chinese

health authorities shared the full genome of the novel virus with the international community on 10 January 2020, several research teams have been striving to develop vaccines and treatments. However, it will take some time before such treatments or vaccines are available.

Presently, treatment is symptomatic and will be based on the patient's clinical condition and supportive care. Supportive treatment includes oxygen therapy, hydration and fever/pain management and antibiotics if bacterial co-infection is present.

Specific treatment might include intravenous remdesivir (a novel nucleotide analogue prodrug in development) which has been tested in the first patients hospitalised in the USA (Michelle L. Holshue, 2020) and in France (unpublished data).

For a rationale for different treatment options, as well as guidance for the treatment of special populations (pregnant patients, newborns, children and young people) and nutritional support, see the guidance document (in English or Chinese) prepared by the Chinese Pharmaceutical Association, also available from the dedicated FIP webpage. (Chinese Pharmaceutical Association, 2020 (12 Feb))

Ensuring stock of key medicines, equipment and facilities

Aiming at the prevention and disease control of SARS-CoV-2 infections, pharmacies should guarantee the supply of medicines, including those used for disease prevention, diagnosis and treatment, as well as for supplying medical support teams.

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

The list includes antiviral medicines, antimicrobial agents, antipyretics and analgesics, corticosteroids and several other categories of medicines. See the table developed by the Chinese Pharmaceutical Association in Annex 1.

For a list of key facilities, equipment and personal protective equipment, also developed by the Chinese Pharmaceutical Association, see Annex 2.

Prevention

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

People who have had social contact with symptomatic individuals with confirmed SARS-CoV-2 infection should be followed up as a contact through the local healthcare teams.

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

1. Frequently clean hands by using alcohol-based hand rub or soap and water;
2. When coughing and sneezing cover the mouth and nose with a flexed elbow or tissue – throw the tissue away immediately and wash hands;
3. Avoid close contact with anyone who has fever and cough;
4. If you have fever, cough and difficulty breathing seek medical care early and share previous travel history with your healthcare provider;
5. When visiting live markets in areas currently experiencing cases of novel coronavirus, avoid direct unprotected contact with live animals and surfaces in contact with animals;

6. The consumption of raw or undercooked animal products should be avoided. Raw meat, milk or animal organs should be handled with care, to avoid cross-contamination with uncooked foods, as per good food safety practices. (World Health Organization, 2020)

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

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

Pharmacy-mediated activities

See also Annex 3 – Decision tree for community pharmacy advice

Preventive measures

Pharmacist 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 SARS-CoV-2 strategies (including the closest referral centre for SARS-CoV-2), and by maintaining currency in that information;
- Informing, advising and educating the community;
- Supplying appropriate products;
- Encouraging individuals and families with suspected cases of SARS-CoV-2 acute respiratory disease to seek treatment from healthcare facilities that possess the appropriate environment and equipment to manage such patients. 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 SARS-CoV-2 patients. Endeavouring to treat patients in inadequate environments may put healthcare professionals and others at risk.

In addition, the following measures should be considered by the pharmacy management (Chinese Pharmaceutical Association, 2020 (12 Feb)):

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

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

Use of masks

Wearing a medical mask is one of the prevention measures to limit spread of certain respiratory diseases, including SARS-CoV-2, in affected areas. However**, the use of a mask alone is insufficient to provide an adequate level of protection** and other equally relevant measures should be adopted.

If 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 SARS-CoV-2.

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 SARS-CoV-2 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.

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)

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

Advice to the community
Individuals without respiratory symptoms should:

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

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

Individuals with respiratory symptoms should:

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

Wearing medical masks when not indicated may cause unnecessary cost, add to the procurement burden and create a false sense of security that can lead to neglecting other essential measures such as hand hygiene practices. Furthermore, using a mask incorrectly

may hamper its effectiveness to reduce the risk of transmission. (World Health Organization, 2020)

Additional guidance can be found in the CDC's *Interim Infection Prevention and Control Recommendations for Patients with Confirmed 2019 Novel Coronavirus (2019-nCoV) or Patients Under Investigation for 2019-nCoV 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 SARS-CoV-2 infection, 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 Orzanization, 2020)

Screening / Triage

The United States CDCs recommend the following criteria to guide the evaluation of patients under investigation for SARS-CoV-2 (Centers for Disease Control and Prevention, 2020):

Clinical features	**&**	**Epidemiologic risk**
Fever **or** signs/symptoms of lower respiratory illness (e.g. cough or shortness of breath)	**AND**	Any person, including healthcare workers, who has had close contact with a laboratory-confirmed SARS-CoV-2 patient within 14 days of symptom onset
Fever **and** signs/symptoms of a lower respiratory illness (e.g., cough or shortness of breath)	**AND**	A history of travel from **Hubei Province**, China within 14 days of symptom onset
Fever **and** signs/symptoms of a lower respiratory illness (e.g., cough or shortness of breath) requiring hospitalisation	**AND**	A history of travel from **mainland China** within 14 days of symptom onset

Patients matching the criteria in any the three scenarios should be referred to an appropriate healthcare centre for further observation.

Pharmacists who identify patients who match such criteria should isolate the patient (see following section, "Referral and isolation"), not physically examine them and **immediately** notify the appropriate health authorities so that the necessary measures can be taken to provide care to the patient and prevent further transmission.

Individuals who feel unwell but do not fall into one of the above three scenarios should be advised to stay at home and adopt the general preventive measures of most respiratory infections (see dedicated section below).

Referral and isolation

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

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

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

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

The WHO recommends that suspected cases of SARS-CoV-2 infection are isolated and monitored in a hospital setting to ensure both safety and quality of health care (in case patients' symptoms worsen) and public health security.

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

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

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

Pharmacy as an information resource

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

FIP has also developed a small easy-to-print poster with key advice that pharmacists can provide in a range of different scenarios (Annex 3).

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.

Laboratory testing for SARS-CoV-2 in suspected human cases

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. 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.

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

Infection control: hand washing and hand rubbing

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

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

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

How to prepare alcohol-based handrub formulations

For detailed information on how to prepare handrub formulations, including calculation and formulation methods and a step-by-step guide for local producers, refer to the WHO's *Guide to Local Production: WHO-recommended Handrub Formulations*, which we reproduce in these guidelines for easier reference (Annex 4).

The document is also available at:
https://www.who.int/gpsc/5may/Guide_to_Local_Production.pdf

Cleaning and disinfection management

Because SARS-CoV-2 can be transmitted through droplets and contact, any areas of the hospital or pharmacy environment that may have been contaminated with the virus should be disinfected. Previous studies on SARS CoV and MERS-CoV suggest that SARS-CoV-2 is sensitive to ultraviolet radiation and heat (56°C for 30 minutes). 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.

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 (12 Feb))

For a list of disinfectants and their application to commonly contaminated objects, see Annex 5.

Infection control: other precautions

1. Respiratory hygiene should be practised by all, especially ill persons, at all times. Respiratory hygiene refers to covering the mouth and nose during coughing or sneezing using medical masks, cloth masks, tissues or a flexed elbow, followed by hand hygiene.

2. Discard materials used to cover the mouth or nose or clean them appropriately after use (e.g. wash handkerchiefs using regular soap or detergent and water).

3. Avoid direct contact with bodily fluids, particularly oral or respiratory secretions, and stool. Use disposable gloves and eye protection to provide oral or respiratory care and when handling stool, urine and waste. Perform hand hygiene before and after removing gloves.

4. Gloves, tissues, masks and other waste generated by ill persons or in the care of ill persons should be placed in a lined container in the ill person's room before disposal with other household waste.

5. Avoid other types of possible exposure to ill persons or contaminated items in their immediate environment (e.g. avoid sharing toothbrushes, cigarettes, eating utensils, dishes, drinks, towels, washcloths or bed linen). Eating utensils and dishes should be cleaned with either soap or detergent and water after use and may be reused instead of being discarded.

6. Clean and disinfect frequently touched surfaces such as bedside tables, bedframes, and other bedroom furniture daily with regular household disinfectant containing a diluted bleach solution (1 part bleach to 99 parts water).

7. Clean and disinfect bathroom and toilet surfaces at least once daily with regular household disinfectant containing a diluted bleach solution (1 part bleach to 99 parts water).

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)

Alleviating concerns: travel

People may be concerned about the possibility of travelling in the same aeroplane, ship, bus or other vehicle with a person infected with SARS-CoV-2, and may ask the pharmacy about this.

It is useful to remind them that person-to-person spread of the SARS-CoV-2 virus is thought to occur mainly via respiratory droplets produced when an infected person coughs or sneezes, similar to how influenza and other respiratory pathogens spread. As such, this can happen during travelling.

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

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

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

Pharmacy staff

Although it is important that all pharmacy staff are familiar with these guidelines and advice, the assessment of a patient's risk of SARS-CoV-2 infection should be led by 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 SARS-CoV-2 exists, because they are interacting with patients who are possibly infected, therefore healthcare workers should take measures to protect themselves as well.

Answers to frequent questions from the public and patients

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

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

How does the virus spread?
This virus probably originally emerged from an animal source but now seems to be spreading from person to person. It is important to note that person-to-person spread varies. Some viruses are highly contagious (like measles), while other viruses are less so. At this time, it is unclear how easily or sustainably SARS-CoV-2 is spreading between people. (Centers for Disease Control and Prevention, 2020)

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

I have fever and cough. Could it be the novel coronavirus?
If you have been to China or in close contact with a confirmed case of SARS-CoV-2 infection, it could be, and you should be followed up and tested. Otherwise, it is probably not the novel virus. In the Northern Hemisphere, it is now flu season, so it may be influenza.

What can I do to protect myself from infection?
Usual hygiene measures to prevent infections spreading should be followed: regular hand washing, covering the mouth and nose when coughing and sneezing, thoroughly cooking meat and eggs. Avoid close contact with anyone showing symptoms of respiratory illness such as coughing and sneezing. (Royal Pharmaceutical Society, 2020)

Are there any specific medicines to prevent or treat SARS-CoV-2?
To date, there is no specific medicine recommended to prevent or treat SARS-CoV-2. However, those infected with the virus should receive appropriate care to relieve and treat symptoms, and those with severe illness should receive optimised supportive care. Some specific treatments are under investigation and will be tested through clinical trials. The WHO is helping to accelerate research and development efforts with a range of partners. (World Health Organization, 2020)

If you want to protect yourself from getting infected with the new coronavirus, you should maintain basic hand and respiratory hygiene, and safe food practices and avoid close contact, where possible, with anyone showing symptoms of respiratory illness such as coughing and sneezing.

The following measures are not specifically recommended as SARS-CoV-2 remedies because they are not effective to protect yourself and can be even harmful:

- Taking vitamin C
- Drinking traditional herbal teas
- Wearing multiple masks to maximise protection
- Self-medicating with medicines such as antibiotics

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

Do vaccines against pneumonia protect you against SARS-CoV-2?
No. Vaccines against pneumonia, such as pneumococcal vaccine (PV) and Haemophilus influenza type B (Hib) vaccine, do not provide protection against SARS-CoV-2.
The virus is so new and different that it needs its own vaccine. Researchers are trying to develop one and the WHO is supporting their efforts. Although PV and Hib are not effective against SARS-CoV-2, vaccination against respiratory illnesses is highly recommended to protect your health. (World Health Organization, 2020)

Are antibiotics effective in treating the SARS-CoV-2?
No, antibiotics do not work against viruses; they only work on bacterial infections. SARS-CoV-2 is a virus and, therefore, antibiotics should not be used as a means of prevention or treatment. However, if you are hospitalised with SARS-CoV-2, you may receive antibiotics because bacterial co-infection is possible. (World Health Organization, 2020)

Can SARS-CoV-2 be caught from a person showing no symptoms?
Possibly. Understanding the time when infected patients may spread the virus to others is critical for control efforts. Detailed medical information from people infected is needed to determine the infectious period of SARS-CoV-2. According to recent reports, it may be possible that people infected with SARS-CoV-2 may be infectious before showing significant symptoms. However, based on currently available data, the people

who have symptoms are causing the majority of virus spread. (World Health Organization, 2020)

Is it safe to receive a letter or a package from China?
Yes, it is safe. People receiving packages from China are not at risk of contracting SARS-CoV-2. From previous analysis, we know coronaviruses do not survive long on objects, such as letters or packages. (World Health Organization, 2020)

Are medical masks effective in protecting me from infection?
Wearing a medical mask is one of the prevention measures to limit spread of certain respiratory diseases, including SARS-CoV-2, in affected areas. However, the use of a mask alone is insufficient to provide the adequate level of protection and other equally relevant measures should be adopted, including adequate hand hygiene and other infection control and prevention measures. (World Health Organization, 2020)

I have been to China and I have diarrhoea. Could it be SARS-CoV-2?
The most common symptoms of SARS-CoV-2 infection are fever, cough and shortness of breath. The disease may also occur with other mild symptoms only, including: low-grade fever, cough, malaise, rhinorrhoea, sore throat without any warning signs, such as shortness of breath or difficulty in breathing, increased respiratory secretions (i.e. sputum or haemoptysis), gastrointestinal symptoms such as nausea, vomiting, and/or diarrhoea and without changes in mental status (i.e. confusion, lethargy). However, if only diarrhoea is present, without any respiratory symptoms, it is unlikely to be a SARS-CoV-2 infection.

Can pets at home spread SARS-CoV-2?
At present, there is no evidence that companion animals/pets such as dogs or cats can be infected with SARS-CoV-2. However, it is always a good idea to wash your hands with soap and water after contact with pets. This protects you against various common bacteria such as *E coli* and salmonella that can pass between pets and humans. (World Health Organization, 2020)

Myth busting

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

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

Contact with Chinese people should be avoided until we know more about the disease
Close contact with ANY PERSON who has been to China in the previous 14 days AND who presents symptoms of the disease should be avoided. Otherwise, contact with Chinese individuals or communities per se should not be avoided and doing so generates stigma.

Eating garlic can help prevent infection with SARS-CoV-2
Garlic is a healthy food that may have some antimicrobial properties. However, there is no evidence from the current outbreak that eating garlic has protected people from SARS-CoV-2.

The smoke and gas from fireworks and firecrackers prevent SARS-CoV-2
No. Breathing in the smoke and gas from a firework or firecracker is dangerous and does not kill SARS-CoV-2.

Applying sesame oil blocks SARS-CoV-2 from entering the body

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

Drinking anise seeds infusion can help prevent infection with SARS-CoV-2
Anise seeds infusion is a drink that may have some hydrating properties. However, there is no evidence from the current outbreak that drinking anise seeds infusion has protected people from SARS-CoV-2.

Gargling mouthwash protects you from infection with SARS-CoV-2
No, it does not. There is no evidence that using mouthwash will protect you from infection with SARS-CoV-2. Some brands or mouthwash can eliminate certain microbes for a few minutes in the saliva in your mouth. However, this does not mean they protect you from SARS-CoV-2 infection. (World Health Organization, 2020)

Regularly rinsing your nose with saline helps prevent infection with SARS-CoV-2
No, it does not. There is no evidence that regularly rinsing the nose with saline has protected people from infection with SARS-CoV-2. There is some limited evidence that regularly rinsing the nose with saline can help people recover more quickly from the common cold. However, regularly rinsing the nose has not been shown to prevent respiratory infections. (World Health Organization, 2020)

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Key contents	Published by	Hyperlink (click to consult)
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Validity

This document has been 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.

ANNEX 1: List of key medicines for the treatment of SARS-CoV-2 infections

This list was compiled by the Chinese Pharmaceutical Association. 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 (12 Feb)) 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
	According to the existing drug list of your medical institution	
Corticosteroids	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 pill: 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; Granule: 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

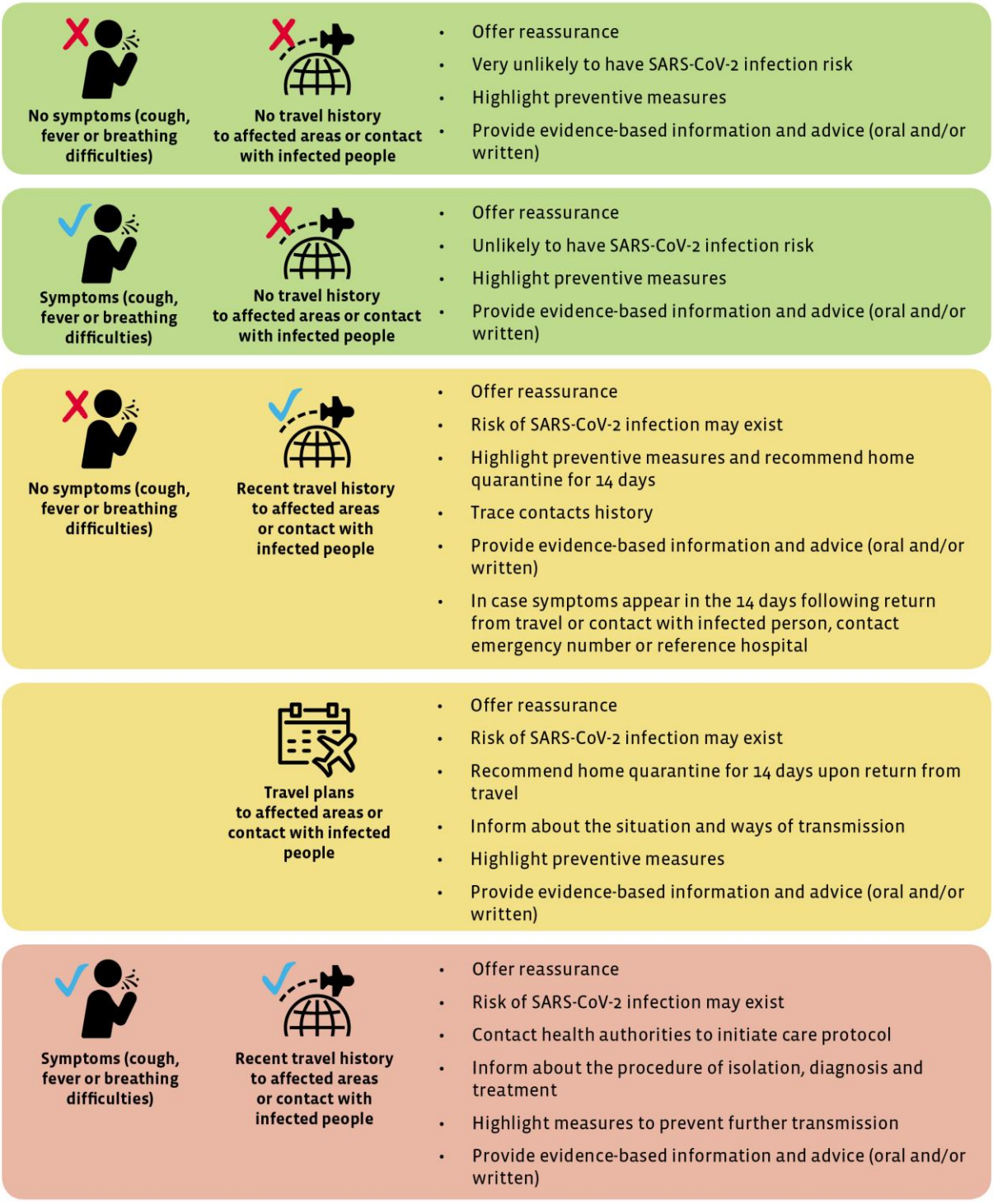
ANNEX 2: List of key facilities, equipment and personal protective equipment of SARS-CoV-2 infections

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 (12 Feb))

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

ANNEX 3: Decision tree for community pharmacists' advice

CORONAVIRUS SARS-CoV-2
HOW CAN PHARMACISTS ADVISE?



Adapted from "Coronavírus 2019-nCoV: Intervenção da farmácia", Associação Nacional das Farmácias (Portugal)

fip ADVANCING PHARMACY WORLDWIDE

More information: www.fip.org/coronavirus

ANNEX 4: 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:
• Ethanol 96% • Hydrogen peroxide 3% • Glycerol 98% • Sterile distilled or boiled cold water	• 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)

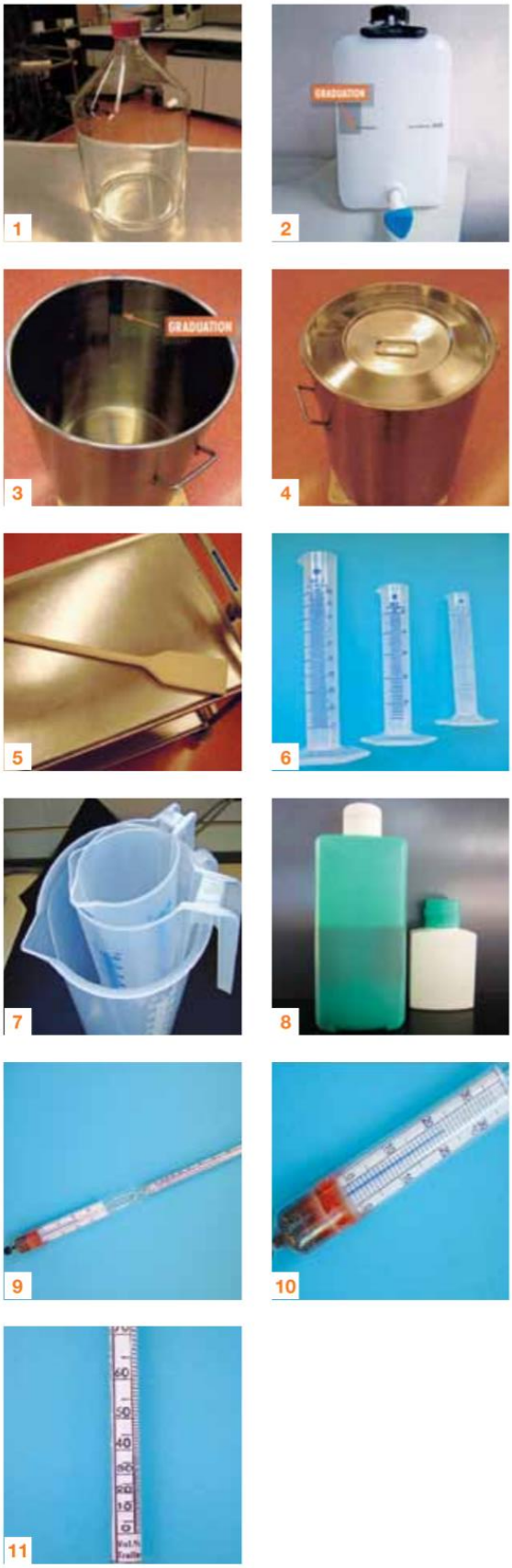
• Measuring cylinders and measuring jugs (6, 7)

• 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
• Ethanol 96%: 8,333 ml • Hydrogen peroxide 3%: 417 ml • Glycerol 98%: 145 ml	• Isopropyl alcohol 99.8%: 7,515 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.

2. Hydrogen peroxide is added using a measuring cylinder.

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.

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.

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

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.

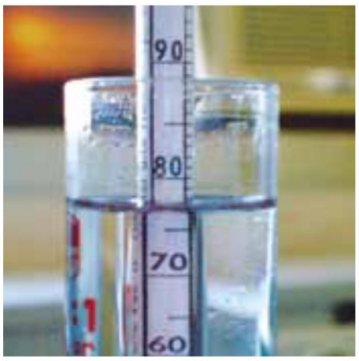
Final products

FORMULATION 1	FORMULATION 2
Final concentrations: • Ethanol 80% (v/v), • Glycerol 1.45% (v/v), • Hydrogen peroxide 0.125% (v/v)	Final concentrations: • 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 ± 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% (± 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 5: List of disinfectants for commonly contaminated objects of SARS-CoV-2 infections

This 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 (12 Feb))

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 (5000-20000mg/L), disinfectant powder or bleach powder containing water absorption	
Textiles such as clothes, bedding	Chlorine-containing disinfectant (500mg/L, ethylene oxide	
Prescriptions	Ethylene oxide	

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