

Cold, flu and sinusitis: Managing symptoms and supporting self-care

A handbook for
pharmacists

2021



FIP Development Goals



International
Pharmaceutical
Federation

Colophon

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Executive summary

Upper respiratory tract infections (URTIs) are contagious conditions, usually viral, affecting the nasal cavity, pharynx and larynx.¹ They may include ailments such as the common cold, influenza and sinusitis.¹ While, in most cases, these respiratory conditions are minor and self-limiting, they can have significant repercussions on patients' quality of life and productivity, even affecting children and caregivers of those infected.¹

Cough, sore throat, rhinitis, rhinorrhoea and headache are among some of the signs and symptoms of URTIs and they often simultaneously coexist.^{1, 2} As such, it is paramount for healthcare professionals, including pharmacists, to be able to discern possible causes of respiratory signs and symptoms and, most importantly, to recognise red-flag symptoms requiring prompt evaluation by a medical practitioner.

URTIs are ailments frequently encountered in outpatient settings, including outpatient and general practitioner clinics as well as community pharmacies. It is estimated that respiratory illnesses account for over 20 million visits to community pharmacists each year in the USA, and represent one of the most prevalent reasons, if not the most prevalent reason, for which patients seek advice from a healthcare professional.¹ Many treatment options are thus readily available over-the-counter for patients to manage their respiratory symptoms.

As our health systems are evolving, we need a new approach to healthcare that empowers people to look after their own health. Improving health literacy and education can have such an empowering effect on people's lives. Yet its importance is underplayed in healthcare policymaking today. Enabling people to manage their health and well-being is a key part of overcoming the multiple healthcare crises across all countries and territories, and to relieving pressure on overburdened healthcare systems. To achieve this, all stakeholders need to commit to initiatives that put the patient at the centre of treatment, an equal commitment to better education and a greater emphasis on self-care.

The FIP statement of policy "[Pharmacy: Gateway to care](#)" emphasises the importance and benefits of self-care and recognises both the personal responsibility of patients to enhance and maintain their own health and well-being, and the responsibility of pharmacists to support patients in self-care activities. This is further detailed in the publication "[Pharmacy as a gateway to care: Helping people towards better health](#)".

In light of the prevalence, clinical features and opportunities for education and counselling regarding URTIs, pharmacists are ideally placed to support patients in the management of such infections. As accessible, front-line healthcare professionals, pharmacists, especially in community settings, play an important role in assessing the presenting signs and symptoms through screening, triage and referral if deemed necessary. Moreover, pharmacists are well equipped with the necessary clinical and pharmacological knowledge to recommend appropriate supportive care and non-pharmacological treatment options in addition to guiding patients through the variety of non-prescription products and medicines available for these indications. Pharmacists are also available to educate patients on the use of complementary medicines, which may present both risks and benefits, when treating symptoms of URTIs.

This handbook serves as a ready-to-use reference document covering different aspects of the management of common URTIs in the community setting. Throughout the various sections, guidelines, algorithms and summary tables, this handbook is meant to support pharmacists in promoting respiratory well-being, developing a thorough understanding of commonly encountered URTIs, and navigating through both non-pharmacological and pharmacological management options.

Pharmacists are embedded key players in the health landscape of their communities and are trusted for patient-centred, comprehensive, timely advice. The accessibility of pharmacy means that the knowledge and skills of community pharmacists are extensively sought by everyone from teenagers to new parents, to older adults and everyone in between. This handbook will further strengthen their essential role within the community to provide optimal patient care and support informed self-care.

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Foreword

By the chair of the FIP Board of Pharmaceutical Practice

As we celebrate the third anniversary of the World Health Organization's [Declaration of Astana on Primary Healthcare](#), in October 2021, FIP has reiterated once again the global commitment of pharmacy to the principles of this important document. It is imperative to prioritise primary healthcare, including health education, disease prevention, disease screening and patient triage to make health systems more efficient, more resilient and more sustainable. Primary healthcare is a critical factor towards universal health coverage and to leaving no one behind with the healthcare they need.

Also, it is paramount to empower individuals to lead healthy lives through responsible and informed self-care. Healthcare professionals and pharmacists in particular — especially in the community setting — can play a key role in improving health literacy and supporting self-care, including appropriate choices in terms of diet and lifestyle, use of non-prescription medicines and medical devices, use of alternative and complementary medicine products and the adoption of other non-pharmacological measures.

The role of pharmacists in supporting self-care and improving patient well-being lies at the intersection of FIP Development Goals 14 (Medicines expertise), 15 (People-centred care) and 18 (Access to medicines and services). Furthermore, self-care in the area of upper respiratory tract infections is additionally linked to FIP DGs 16 (Communicable diseases) and 17 (Antimicrobial stewardship).

Over the past couple of years, the COVID-19 pandemic caused by a novel respiratory virus has led to the promotion and adoption of preventive measures by populations all around the world, which clearly had an impact on the transmission rates not only of COVID-19, but of infectious respiratory diseases in general, including common colds and influenza. However, upper respiratory tract infections and inflammation are and will probably remain among the most common reasons for consultations with community pharmacists and for the use of self-care approaches to symptom management.

In addition to the menace of future epidemics or pandemics, respiratory health and well-being are increasingly compromised by the global threat of air pollution — a problem that the World Health Organization listed as [one of the top ten threats to global health](#) in 2019, with [99% of the world currently breathing air that exceeds the WHO guideline limits](#) containing high levels of pollutants. Air pollution makes people more vulnerable to respiratory infections and inflammation and can have [other devastating effects on health](#).

Common upper respiratory tract conditions and the impact of air pollution on health represent important challenges for primary healthcare, and pharmacists can certainly play an important role in promoting awareness and health literacy in this area, supporting self-care, assessing patients' signs and symptoms through screening, triage and referral, and in mitigating the impact of air pollution on respiratory well-being.

In recent times, FIP has produced various resources in the area of respiratory health, such as the recent report [“The global threat of air pollution and its impact on patient care: Supporting pharmacy practice and workforce development”](#), the global survey report [“Mitigating the impact of air pollution on health: The role of community pharmacists”](#), the call to action [“Mobilising pharmacists across our communities to mitigate the impact of air pollution on health”](#) and different resources to support pharmacists throughout the [COVID-19](#) pandemic.

With this new handbook on cold, flu and sinusitis, FIP aims to support pharmacists and the pharmacy workforce in their primary healthcare role in these areas, including the prevention and management of these conditions in the community. We trust you will find this publication valuable for your practice.



Paul Sinclair

1 Introduction

Upper respiratory tract infections (URTIs) are defined as a group of contagious conditions that affect the respiratory airways, such as the common cold, influenza and sinusitis. These ailments are frequent reasons for which patients seek counselling and advice from healthcare professionals, particularly in community pharmacies.¹ In 2019, there were 17.2 billion cases of URTIs globally, with higher impact on mortality on the low-income countries.³ These infections also account for an estimated 3.9 million deaths annually among children worldwide, with a high proportion (around 40%) occurring in Africa.⁴ In the USA alone, URTIs are estimated to account for approximately 10 million primary care appointments with general practitioners and represent a cost of over USD 22 billion each year.² Adults suffer on average two to four URTIs per year, while children experience up to six to eight episodes yearly.^{2,5} These data highlight the burden these conditions place on patients, including impacts on work absenteeism, daily life disruption and the need for care.⁵ In temperate regions, the highest incidence appears to occur during autumn and winter, whereas in tropical regions, most URTIs occur during the rainy season.⁵

Air pollution is classified into indoor and outdoor: ambient air pollution (outdoor pollution) and household air pollution (indoor pollution).⁶ Household air pollution is generated by household combustion of fuels, such as burning of coal, wood or kerosene, or using open fires or basic stoves in poorly ventilated areas.⁷ Further pollutant sources include tobacco products, products for household cleaning and maintenance, excess moisture or mould, animal hair or even volatile products that result from cooking activities.⁸ There are various sources of pollutants, including particulate matter, nitrogen dioxide from motor cars or indoor gas cookers, sulphur dioxide from burning of fossil fuels, and ozone at ground level caused by the chemical reaction of volatile organic compounds with pollutants from vehicle emissions in the presence of sunlight.^{7,9,10} Particulate matter, which consists of a mixture of solid and liquid droplets arising from fuel combustion and road traffic, is the pollutant with greatest repercussions on humans and is therefore used as a measure for air pollution.⁷

In 2019, the World Health Organization (WHO) listed air pollution as one of the top 10 threats to global health.¹¹ In fact, the WHO reported approximately seven million premature deaths globally each year due to the combined effects of ambient and household air pollution.¹² Air pollution is one of the leading causes of various illnesses such as cardiovascular disease, chronic obstructive pulmonary disease, lung cancer and acute respiratory infections.¹³ On one hand, it is estimated that about 26% of deaths due to respiratory infections can be attributed to ambient air pollution.¹³ Household air pollution, on the other hand, is believed to cause around four million deaths annually and tends to primarily affect countries in Asia and Africa.⁷ About 90% of people currently breathe air containing high levels of pollutants that exceeds WHO guideline limits, with developing countries suffering from the highest exposures.¹³

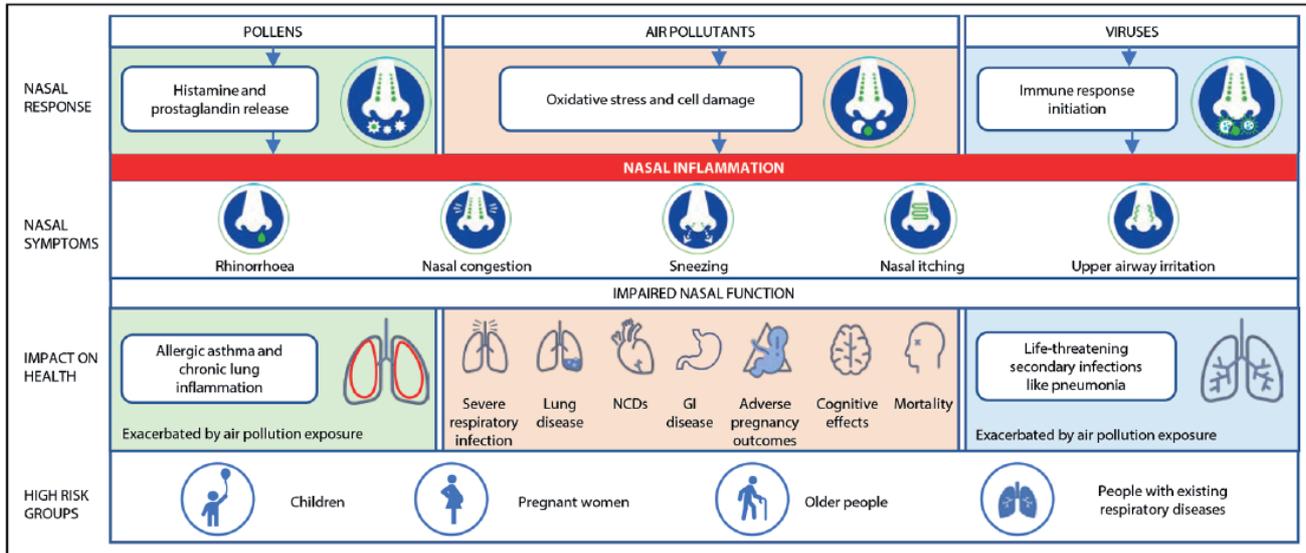
URTIs often involve the nasal cavity, nose or nostrils, sinuses, pharynx and larynx.^{1, 2, 14} They are usually attributed to a plethora of microorganisms directly invading the mucosa, leading to self-limiting irritation and swelling of the upper airways.² Most URTIs are caused by viruses, predominantly human rhinoviruses, parainfluenza viruses, coronaviruses, adenoviruses, respiratory syncytial virus, enteroviruses, human metapneumovirus and influenza viruses.¹⁵

Otitis media, pharyngitis and laryngitis may also represent additional examples of URTIs, in addition to the common cold, influenza and sinusitis.¹⁵ An illustration of the anatomy of the upper and lower respiratory tract as well as potential sites of infection can be found in the "[Viral Upper Respiratory Tract Infections](#)" resource.

Under normal circumstances, the respiratory tract utilises an array of defence mechanisms against inhaled pollutants. These include aerodynamic filtration, mucociliary clearance, particle transport, phagocytosis by alveolar macrophages as well as innate and acquired antiviral immunity.¹⁶ It is postulated that exposure to nitrogen dioxide and other pollutants contributes to inflammation and oxidative stress and may ultimately modulate these functions.^{16, 17} Particles may deposit themselves and remain in the respiratory tract, inhibit mucociliary clearance mechanisms, disrupt epithelial tight junctions and impair macrophages phagocytosis.¹⁸ There is some evidence that combustion-derived particulate matter interferes with processes essential to the immune response, increasing susceptibility to developing respiratory infections.¹⁷⁻²⁰ Figure 1 summarises the plausible pathways of nasal response towards airborne aggressors, such as pollutants, pollens, and viral pathogens, as well as the impact of nasal airway inflammation on systemic health.

Figure 1 — Plausible pathways of nasal response towards airborne aggressors²¹

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“There is a huge lack of awareness of the health effects of air pollution, not only among pharmacies, but also among the public,” highlighted Lars-Åke Söderlund during his recent term as president of the FIP Community Pharmacy Section.²² In fact, only 5% of pharmacists proactively discussed and managed the impact of air pollution on their patients’ respiratory health according to the FIP global survey report “[Mitigating the impact of air pollution on health: The role of community pharmacists](#)”.²² Furthermore, about half of the survey respondents were unaware of the link between air pollution and the immune response to viral infections.²² Findings like these underscore the urgent need for air pollution to be addressed by all individuals in healthcare settings, including by pharmacists.

Although URTIs are usually self-limiting, they can impair health, work productivity and well-being.⁵ The results of a multi-centred, longitudinal study demonstrated the association between URTIs and clinically relevant worsening of quality of life.²³ The symptoms experienced can be distressing, hence adversely impacting on the quality of life of those affected by these infections, including caregivers, parents and children.²⁴ Furthermore, URTIs are thought to directly affect performance and mood, and a 26% decrease in work productivity and an average decrease of 23 minutes in total sleeping time have been reported.²⁵ The USA Centers for Disease Control and Prevention (CDC) notably revealed the significant economic burden brought on by these ailments as a result of more than 20 million missed days of school and more than 20 million days of work lost.²

As COVID-19 (the disease caused by the SARS-CoV-2 virus) continues to spread, it remains challenging for pharmacists to distinguish between different possible causes of patients’ respiratory signs and symptoms, primarily due to the similarities among clinical features of different respiratory conditions.²⁶ Nevertheless, it is crucial for pharmacists to possess sound knowledge of these infections to appropriately evaluate and manage symptoms, provide evidence-based recommendations, and contribute to improving overall health outcomes for each patient presenting with a possible URTI. Cold, flu and sinusitis are conditions that can be largely managed in the community via self-care approaches, but COVID-19 is a different situation. Currently the focus on COVID-19 is in the immunisation of populations and minimisation of the impact of the disease. Pharmacists should be able to triage patients and refer any potential COVID patients to the appropriate healthcare facilities.

2 The role of community pharmacists in common URTIs

Chapter 2 includes first a set of general measures that support the prevention of URTIs and respiratory well-being, a section that focuses on symptoms management, triage and patient referral, a section on patient education and counselling and some final notes on minor ailments schemes and complementary medicines. For specific guidance on cold, influenza and sinusitis, refer to Chapters 3 (Common cold), 4 (Influenza) and 5 (Sinusitis).

2.1 Supporting self-care

According to the WHO, self-care is defined as “the ability of individuals, families and communities to promote health, prevent disease, maintain health, and to cope with illness and disability with or without the support of a healthcare provider”.²⁷ The scope of self-care is broad as it comprises:

- General and personal hygiene;
- Nutrition (e.g., type and quality of food consumed);
- Lifestyle;
- Environmental factors (e.g., living conditions, social life, etc.);
- Socioeconomic factors (e.g., cultural beliefs, income level etc.); and
- Self-medication.

Every individual has the responsibility to protect and promote his or her health and well-being. This involves a holistic approach of self-care interventions, which focus on self-efficacy, autonomy and engagement in health optimisation.²⁷ Pharmacists can act as advocates who empower patients and help them make healthy lifestyle choices, recommend appropriate non-prescription medicines and educate consumers about when they should consult a physician.

In the context of respiratory health, patients should develop a proper understanding of risk factors as well as management and prevention strategies regarding URTIs. In addition to education on URTI prevention as well as pharmacological and non-pharmacological management options, pharmacists also play a crucial role in engaging patients in promoting and maintaining their respiratory health through meaningful self-care counselling, guidance, support and availability to address concerns, dispel myths and recommend courses of action.

Also, as community-based primary healthcare professionals, pharmacists can educate patients about respiratory health and well-being, disease prevention and symptoms management, and on how to protect themselves from the impact of air pollution on health.²⁰ While taking a thorough history with a patient presenting with respiratory symptoms, it is essential that pharmacists gather information on the air quality of the patient’s outdoor and indoor environment. Pharmacists should be able to identify symptoms attributed to air pollutants. For more information on the role of pharmacists in reducing negative effects of air pollution on respiratory health and well-being, see the FIP report “[Mitigating the impact of air pollution on health: The role of community pharmacists](#)”²² and roundtable report “[The global threat of air pollution and its impact on patient care: Supporting pharmacy practice and workforce development](#)”.²⁸

2.2 Disease prevention and respiratory well-being

Respiratory viruses are transmitted via different routes, including direct and indirect contact, droplets and airborne transmission.²⁹ The first approach to maintaining infection control is to prevent transmission. The USA CDC recommends hand hygiene, respiratory hygiene, use of masks and regular disinfection as infection control measures for all patient care.³⁰ These measures are essential to protect individuals from infection and prevent spread. Pharmacists, as accessible, front-line healthcare professionals, have an important role to play in adhering to, educating and promoting these public health recommendations among their communities.

2.2.1 Use of masks

Before the COVID-19 pandemic, the use of masks was far from widespread in many communities, even though it has been proven to be an effective method in the control and prevention of respiratory infections.³¹ Reluctance and fear of wearing masks have been major contributors to hesitancy surrounding the use of these preventive devices. The WHO has produced and made available a variety of infographic resources which can be utilised to inform the public of the significant value of the use of masks. Pharmacists can help educate individuals on how to properly wear masks and can address questions on mask anxiety or hesitancy while providing them with evidence-based written information. It is important to highlight that masks can be effectively used to prevent the spread of colds or influenza and it is important that individuals who present any symptoms use them when in the presence of others to protect them from transmission.

The WHO has a [website with several materials](#) on the appropriate way to wear medical face masks that can be used for educational and patient counselling purposes. Other relevant topics to discuss with patients include the availability of different types of masks as well as the appropriate cleaning, storage and safe disposal of masks. Individuals should be made aware that face masks, when fitted properly, can effectively disrupt the forward momentum of fluid droplets and infectious viral particles expelled from a cough or sneeze, subsequently preventing disease transmission.^{29, 31} More specific counselling points can be found in Chapter 2.4.

2.2.2 Promoting and supporting nasal hygiene

Respiratory well-being may also be assured through the maintenance of adequate nasal hygiene. Nasal saline irrigation, also known as nasal douche or nasal lavage, is a procedure used to cleanse the nasal passages and sinus cavities.³² The sodium chloride solution contained in nasal irrigation products aids in washing out thick or dry mucus, cell debris, crusts, pollutants, pollens and dust particles, as well as microorganisms and pathogens. This not only helps keep nasal passages clean and clear in addition to improving nasal airflow, but also reduces nasal blockage.³³ The exact mechanism of action of nasal irrigation remains unknown; however, it is believed that it facilitates the mechanical removal of mucus, pathogens and inflammatory mediators while promoting ciliary beat frequency and improving mucociliary clearance.³⁴

While nasal saline irrigation is important in maintaining appropriate nasal hygiene, several international consensus conferences also recommend nasal irrigation as adjuvant treatment for sinonasal and upper respiratory conditions, such as rhinitis, allergic rhinitis, sinusitis, and acute or chronic rhinosinusitis with or without nasal polyps.³⁵ There is additionally evidence demonstrating the effectiveness of nasal irrigation as adjunct treatment in managing symptoms associated with chronic rhinosinusitis and allergic rhinitis.³⁵⁻³⁷ There is also some evidence that regular, daily use of saline nasal sprays or drops could provide relief from nasal symptoms in adults and children with upper respiratory tract infections or allergic rhinitis.²¹

There are different types of nasal irrigation devices and solutions available, including low-volume, high-volume, powered high-pressure and powered nebulised devices.³⁸ These devices can be categorised according to the volume and pressure of the saline solution when delivered into the nasal cavity.³² For instance, nasal drops are considered low-volume, low-pressure devices; nasal sprays are low-volume, high-pressure devices; syringes, bulbs, and neti pots are high-volume, low-pressure devices and are gravity dependent; and squeeze bottles are high-volume, high-pressure devices.³² High-volume devices are indicated as using no less than 100ml of saline solution to irrigate the nose.³⁴ High-volume irrigation provides an overall adequate distribution over the sinonasal cavities and its regular use is therefore supported.^{32, 38-40}

It is vital to use safe, treated sources of water and adequately maintain the cleanliness of devices at all times.⁴¹ Types of water safe for nasal irrigation are sterile or distilled water, boiled and cooled tap water, and tap water passed through a filter designed to trap potentially infectious organisms with filter labels that read “absolute pore size of 1 micron or smaller”.^{41, 42} Pharmacists bear the responsibility to educate individuals on the importance of using safe, treated sources of water for nasal irrigation to prevent unnecessary infection or complications. Furthermore, pharmacists can counsel patients on the correct techniques of using nasal irrigation devices. Chapter 2.4 outlines general information about administration techniques of commonly used nasal devices in the community, like neti pots, nasal sprays and nasal drops.

2.2.3 Ventilation

A key measure to prevent the transmission of respiratory infections is the appropriate ventilation of indoor spaces, especially when shared by several people. Ensuring ventilation with outdoor air can help reduce the indoor concentration of airborne contaminants, including viruses, by removing them from the indoor space and preventing them from adhering to surfaces.⁴³

Ventilation can be improved by opening windows and doors, creating a flow of air. This can be further improved by cross-ventilation, using doors or windows at opposite sides of a room or building. Mechanical ventilators or other devices can be used for the same purpose. Although ventilation is important, care should be taken not to let the temperature drop, especially for older adults, and the outdoor pollution situation of the surrounding area should be considered to avoid contamination of the indoor air.⁴⁴

2.2.4 Other preventive measures

In addition to wearing face masks and maintaining nasal hygiene, individuals are encouraged to adhere to respiratory hygiene or cough etiquette principles.³⁰ They should cover their nose and mouth when coughing or sneezing, and sneeze into their sleeve, elbow or a tissue even where no other person is present because small, aerosolised particles can remain in the air for some time. Individuals should also avoid close contact and avoid sharing personal items with sick people or when they themselves are sick.

Pharmacists can provide friendly reminders about the importance of maintaining a clean environment and encourage individuals to regularly disinfect frequently touched surfaces, such as phones, doorknobs, handles, tables, office ware and children's toys.³⁰ Furthermore, conversations and reminders about frequent hand hygiene practice are encouraged. The WHO and CDC recommend frequent hand-cleansing with soap or soap substitutes, like alcohol-based hand sanitisers.^{30, 38, 45} Individuals should clean their hands for at least 40 seconds when using soap and water or for at least 20 seconds with an alcohol-based hand sanitiser.⁴⁶

Although these preventive measures seem to be part of general knowledge, pharmacists play a crucial role in reminding patients of how adhering to these measures contributes to minimising the spread of infection. There are various infographic printouts published by the WHO, which can be posted in high-traffic areas within the pharmacy or distributed among the community (see [WHO information resources on hand hygiene and advice on the prevention of flu and other URTIs](#)). Ultimately, pharmacists can advocate infection prevention and continue to educate their patients with the help of such visual aids.

2.3 Symptom assessment, patient triage and referral

Pharmacists must take an accurate, full patient history before properly assessing a patient presenting with respiratory symptoms.¹ Information regarding medical and medication history, social history, family history, pregnancy and breastfeeding status as well as allergy status should be taken into consideration. It is the responsibility of pharmacists to ask symptom-specific questions and to assess severity of the presenting symptoms, as well as to rule out circumstances that warrant referral and provide referral if necessary.

Pharmacists can then complete their assessment and recommend the optimal treatment options. Treatment approaches should include suggestions regarding pharmacological and non-pharmacological therapies as well as self-care advice. Pharmacists are expected to be familiar with available non-prescription products and medicines as well as be able to identify health conditions or medicines which may limit treatment options. For instance, drug-disease, drug-food and drug-drug interactions frequently require intervention.

The flowcharts presented in Figure 2 and Figure 3 describe the process of taking a patient history, asking symptom-specific questions, identifying red-flag symptoms as well as considering patients' conditions upon assessment and treatment recommendations. These flowcharts are meant to be readily adopted by pharmacists during the screening, triage and referral process.

Due to the similarity of symptoms of URTI conditions, Table 1 presents a comparison of signs and symptoms of the common cold, influenza, sinusitis and also COVID-19. For more information regarding the management of COVID-19, consult the "[FIP COVID-19 Information Hub](#)". Another condition that might have a similar clinical

presentation is allergic rhinitis. It is normally more frequent during spring and reacts well to oral antihistamine medicines.⁴⁷ However, allergic rhinitis is beyond the scope of this handbook and will likely be the subject of a dedicated FIP publication to be released soon.

2.3.1 Patient history-taking process

History-taking is a complex process that requires a specific skillset, including active listening, effective communication and critical thinking. Pharmacists are required to possess these skills to gather the most accurate patient information, to adequately assess presenting symptoms, and to suggest accurate support and treatment options.

When assessing a patient's symptoms, pharmacists can consider the seven dimensions of symptom characterisation: chronology, bodily location, quality, quantity, setting, any aggravating or alleviating factors, and associated manifestations. These might support the correct assessment of symptoms and help in developing questions that address in detail the symptoms patients are experiencing.⁴⁸

Figure 2 — Patient history-taking framework¹

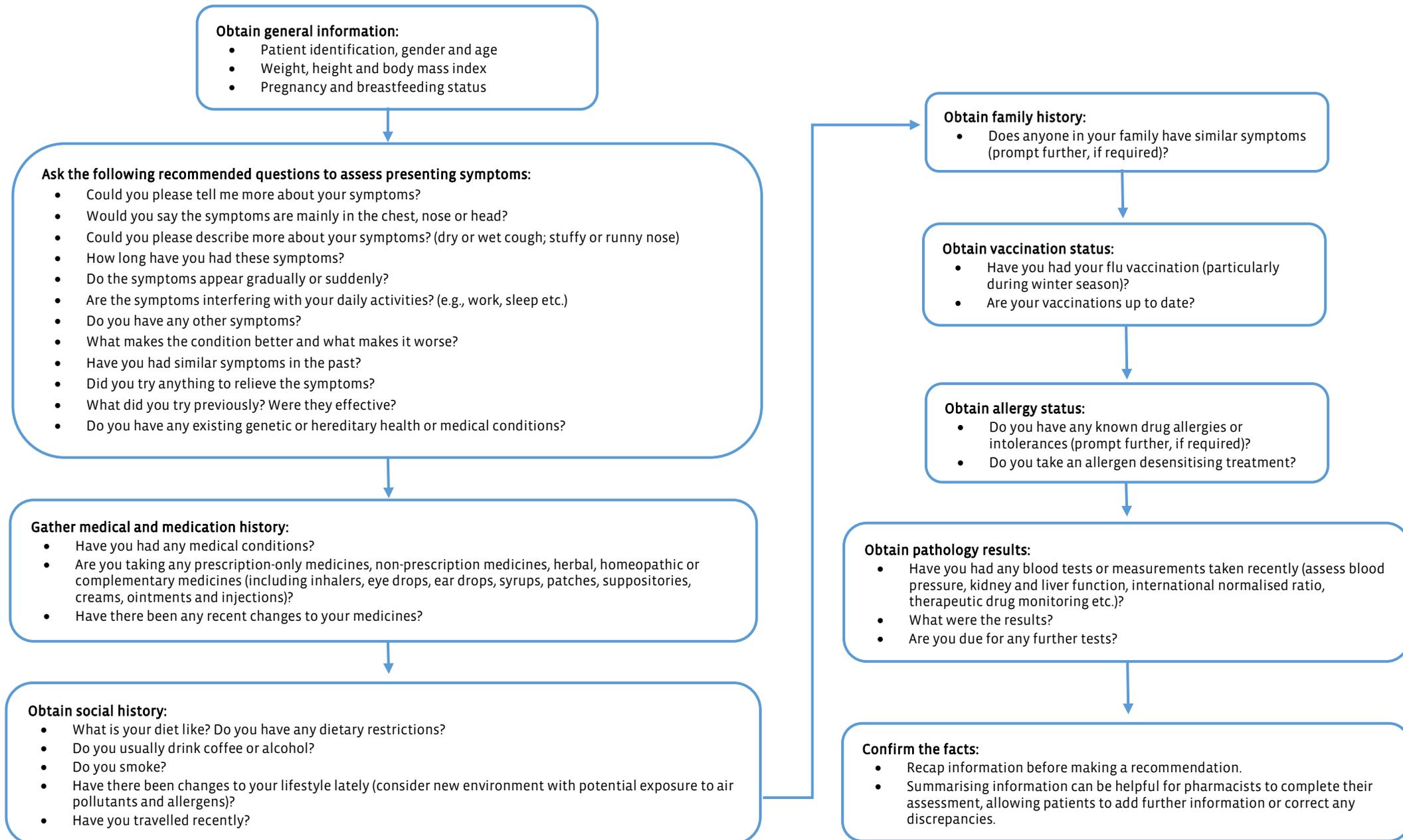
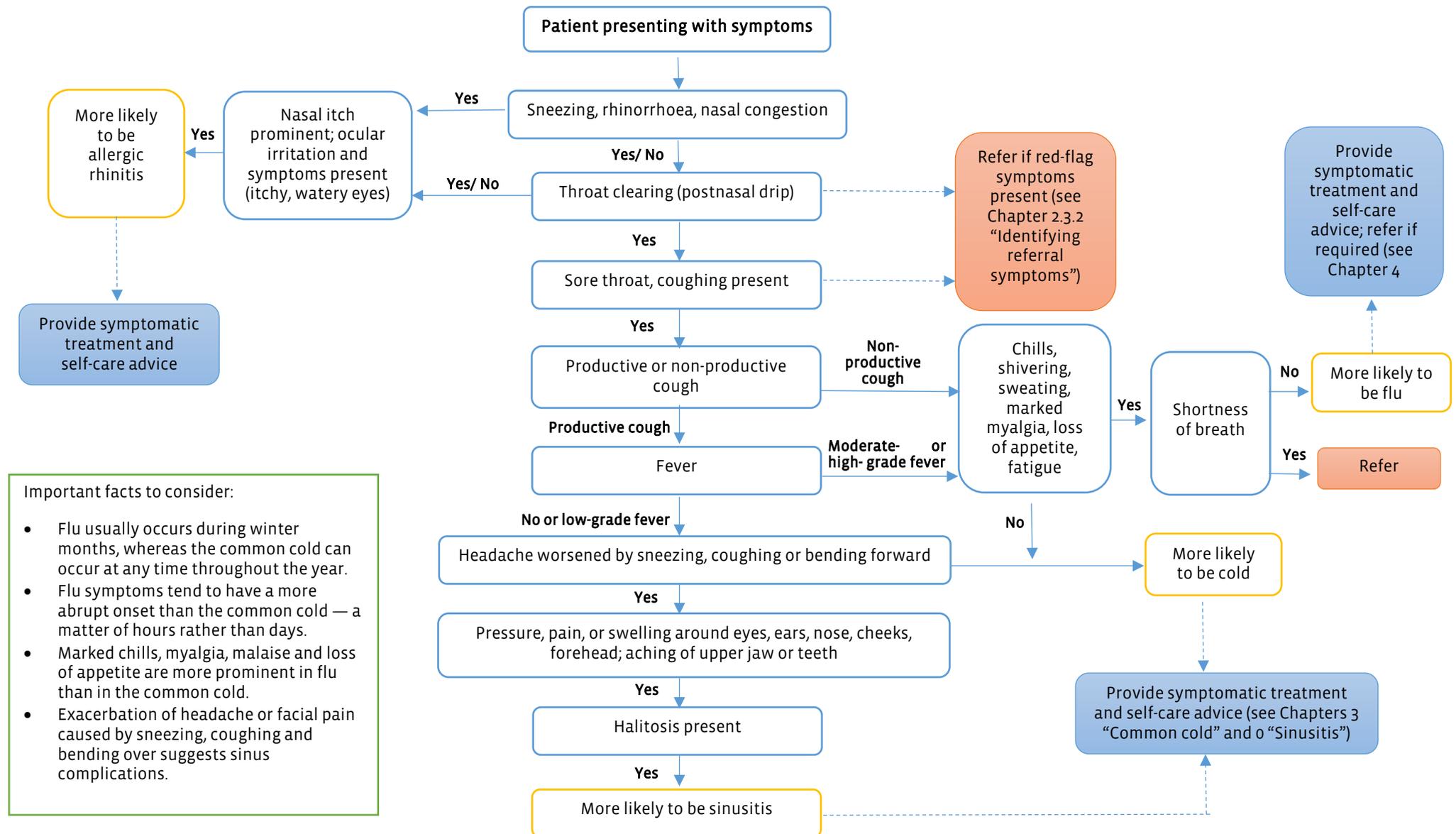


Figure 3 — Flowchart for differential symptom assessment for the common cold, flu and sinusitis ¹



Important facts to consider:

- Flu usually occurs during winter months, whereas the common cold can occur at any time throughout the year.
- Flu symptoms tend to have a more abrupt onset than the common cold — a matter of hours rather than days.
- Marked chills, myalgia, malaise and loss of appetite are more prominent in flu than in the common cold.
- Exacerbation of headache or facial pain caused by sneezing, coughing and bending over suggests sinus complications.

Table 1 — Comparison of signs and symptoms of the common cold, influenza, sinusitis and COVID-19 ^{1, 15, 46, 49}

Note that there may be an overlap in clinical features between these infections, and patients might present with variations of these symptoms.

Characteristics of respiratory diseases	Common cold	Influenza	Sinusitis	COVID-19
Duration of symptoms	Three to 14 days	7 to 14 days (cough and fatigue may continue)	7 to 14 days	7 to 25 days
Onset of symptoms	Gradual	Abrupt	Gradual	Gradual
Incubation period	24 to 72 hours (may be as short as 10 to 12 hours)	1 to 4 days	Varies (depending on diagnosis and cause)	2 to 14 days
Sneezing	Common	Sometimes	Common	Rare
Runny or stuffy nose	Common	Sometimes	Common	Sometimes
Coughing	Common (mild to moderate; usually productive cough)	Common (may be severe; usually dry cough)	Common (mild to moderate)	Common (usually dry cough)
Sore throat	Common	Common	Common	Sometimes
Fever	Rare in adults, sometimes occurs in children	Common	Rare in adults, sometimes occurs in children	Common
Headache	Sometimes	Common	Sometimes (worsened with coughing, sneezing, bending forward, or moving eyes from side to side)	Sometimes
Aches and pains	Sometimes (mild)	Very common (marked myalgia)	Common (facial pressure, swelling and pain)	Sometimes
Chills	Rare	Common	Rare	Sometimes
Fatigue and weakness	Sometimes	Common	Sometimes	Common
Shortness of breath	No	No	No	Sometimes
Sense of smell and taste	Reduced senses	Reduced senses	Reduced senses	Loss of senses
Malaise, nausea and vomiting	Rare	Rare in adults, common in children	Rare	Sometimes
Diarrhoea	No	Rare in adults, sometimes occurs in children	No	Rare

2.3.2 Identifying referral conditions

When assessing patients' presenting symptoms, pharmacists must be able to identify red-flag symptoms which warrant direct referral to a medical practitioner or emergency department. Referral conditions which accompany each presenting symptom are summarised below.

Red-flag signs and symptoms accompanying cough include:^{1, 50-52}

- Cough that lasts for more than three weeks;
- Unexplained cough that recurs on a regular basis;
- Discoloured or purulent sputum present with cough;
- Coughing blood (haemoptysis) or blood present in sputum;
- Chest pain (may be suggestive of a cardiovascular cause);
- Shortness of breath (dyspnoea), breathlessness, wheezing (may be suggestive of other conditions, such as asthma, pulmonary embolism, pleural effusion);
- Persistent nocturnal cough in children (may be suggestive of asthma);
- Worsening of shortness of breath from chronic conditions (may be suggestive of an asthma or chronic obstructive pulmonary disease exacerbation);
- Pain on inspiration;
- Stridor (high-pitched noise) or other respiratory noises;
- Debilitating symptoms in elderly;
- New or altered cough in a smoker aged 45 years and above;
- New or altered cough in an immunocompromised individual; and
- New or altered cough in an individual who has visited a COVID-19 exposure site or a country where tuberculosis is endemic.

Red-flag signs and symptoms accompanying sore throat include:¹

- Sore throat that lasts for more two weeks;
- Marked tonsillar exudate accompanied with fever and swollen glands (may be suggestive of glandular fever or bacterial infections);
- Odynophagia (pain with swallowing) or true difficulty in swallowing (may be suggestive of mechanical blockage or bacterial infections);
- Sore throat with mouth ulceration, blistering, small haemorrhages under the skin or skin rashes (may be suggestive of agranulocytosis); and
- Suspected adverse drug reaction or medicine-induced agranulocytosis (examples of medicines known to contribute to agranulocytosis include captopril, carbimazole, cytotoxic medicines, clozapine, sulfasalazine and sulphur-containing antibiotics).

Other referral signs and symptoms can be found in the respective chapters for common cold (Chapter 3.4), influenza (Chapter 4.4) and sinusitis (Chapter 5.4).

2.4 Patient education and counselling

2.4.1 Promoting awareness of antimicrobial resistance and the responsible use of antibiotics

Recognising the growing concern about antimicrobial resistance and the significance of minimising inappropriate use of antimicrobials for URTIs, pharmacists, as antibiotics stewards, are responsible for promoting the rational use of antibiotics. Pharmacists should commit to educating patients about the indications for use of antibiotics, the emerging threat of antimicrobial resistance, and the importance of avoiding misuse and overuse of antibacterial agents.⁵³ More specifically, patients should be educated on the difference between bacterial and viral infections as well as the reasons why antibiotics are not effective against viruses, which are the primary cause of the common cold and influenza. Patients should be reminded

that instead of reducing the symptoms of URTIs, the misuse of antibiotics may lead to adverse effects and increased antibiotic resistance.²⁵

In addition to antibiotics misuse, the appropriate use of nasal irrigation devices and masks are also integral components of patient education and counselling with regard to URTI management.

The devices shown below may be different according to the region and availability of products and therefore it is important to always follow the product labelling.

2.4.2 Using neti pots or nasal cups⁵⁴

1. Mix the contents of pre-packaged salt with 100ml of lukewarm suitable water in the neti pot.
2. Lean over a sink, looking directly into the basin.
3. Turn head slightly to one side, and gently insert the spout of the neti pot into the upper nostril so that it forms a comfortable seal. Do not press the spout against the middle part (septum) of the nose. Keep mouth open.
4. Raise the neti pot so that the solution pours into the upper nostril. It should go through and drain out of the other nostril. While doing this, remember to breathe through the mouth.
5. When the neti pot is empty, gently breathe out through both nostrils to clear out mucus and excess saline solution. Gently blow the nose.
6. Repeat the above steps for the other nostril.
7. Clean the device after each use.

More information on how to use neti pots can be found [here](#). An example of a neti pot can be seen in Figure 4.

Figure 4 — Example of a neti pot



2.4.3 Administering nasal sprays (including with nozzle)⁵⁰

1. Gently blow the nose to remove excess mucus and ensure the nostrils are as clear as possible.
2. Shake the nasal spray well.
3. Tilt the head forward.
4. Insert the nozzle tip just inside one nostril, aiming towards the outside wall of the nose.
5. Press the other nostril with one finger to close it off.
6. Push down on the spray bottle while breathing in gently and steadily.
7. Remove the nasal spray from the nostril and breathe out through the mouth.
8. Repeat step 4 to 7 for the other nostril.
9. Wash hands thoroughly after each use.

More information on how to use nasal sprays can be found [here](#). Examples of nasal sprays can be seen in Figure 5.

Figure 5 — Examples of nasal sprays



2.4.4 Administering nasal drops⁵⁰

1. Gently blow the nose to remove excess mucus and ensure the nostrils are as clear as possible.
2. Tilt the head backwards, as far as possible, or lie down and hang the head over the edge of the bed.
3. Avoid touching the dropper tip to the nose.
4. Place the correct number of drops into the nose.
5. Sit up and tilt the head forward to the knees, moving it left to right for several minutes.
6. Repeat step 2 to 5 for the other nostril.
7. Rinse the dropper tip after each use.
8. Wash hands thoroughly after each use.

More information on how to use nasal drops can be found [here](#). An example of nasal drops can be seen in Figure 6.

Figure 6 — Example of nasal drops



2.4.5 Educating on and encouraging the use of masks^{55, 56}

1. Masks help protect you and your loved ones from developing or spreading infection.
2. Clean your hands before and after putting on a mask, after removing a mask and after touching it at any time.
3. Ensure the mask fully covers your nose, mouth and chin.
4. Masks should be changed if they are soiled or damp or if they are worn for extended periods.
5. Once removed, ensure the mask is either washed (if it is a fabric or reusable mask) or disposed of in a waste bin (if it is a medical or single-use mask).
6. Incorporate “mask manners” into your conversations when you are out in public, using expressions such as “I have a cold. Shall we spread out slightly?”, “Shall we open the window and let some air flow?”, and “Would you like some of my hand sanitiser?”.

For further information on the use of masks, consult the [WHO website – “How to use masks”](#).

Masks should be used for the duration that is indicated for each type of mask. On average and to ensure safety, a medical/surgical mask should be changed every four to six hours whereas a respirator mask (FFP2/N95) should be replaced every eight hours.⁵⁷

2.5 Minor ailment schemes

In some countries, besides reviewing, dispensing and administering medicines, pharmacists can prescribe medicines for people who present with common ailments.⁵⁸

In Canada, a structured programme that allows pharmacists to prescribe for minor ailments has been successful in the past decade, including positive feedback from customers and physicians involved in the process.⁵⁹ The advantages of this type of service are the high rate of symptom resolution, a low rate of re-consultations and a positive cost-benefit ratio.⁶⁰

In Scotland, more than 20 conditions can be managed through a minor ailment service, including sore throat, allergies and cough.⁶¹ Service delivery and access have been rated as highly satisfactory. Another important point is that more than half of the respondents to the satisfaction survey would have accessed general practice for treatment of their minor ailment where this was not available through a pharmacy.⁶²

The inclusion of these types of services in community pharmacies is still a challenge in many countries and territories around the world, although pharmacists in Malaysia, for example, have positive perceptions and attitudes towards the benefits it can have to the public.⁶³

2.6 Evidence-based advice on complementary medicines

There is a myriad of complementary and alternative medicines available for the management of URTIs, and patients may often use such medicines as a first approach to symptom management before visiting the pharmacy or consulting a healthcare professional. As effectiveness and safety information regarding these medicines may be drawn from smaller scale clinical data or may be less readily available, pharmacists play an essential role in providing patients with evidence-based information and guiding them in making informed decisions.⁵⁰ Pharmacists should be able to recognise any potential interaction between a complementary medicine and a conventional medicine, prescription or non-prescription, and report any adverse drug reaction and interaction to the regulatory bodies and local health authorities.

3 Common cold

3.1 Background

The common cold is a mild viral infection affecting the nose, throat, sinuses and upper airways.⁶⁴ Its peak incidence is during autumn and winter, but it can occur at any time of year. It is usually self-limiting with approximately two out of three patients recovering over time without consulting a medical practitioner.¹

More than 200 different virus types can cause the common cold, with rhinoviruses being the most common (accounting for 30–50% of common colds), and coronaviruses being the second most common (accounting for 10–15%).⁶⁵ Other virus types, such as influenza viruses, parainfluenza viruses, enteroviruses, adenoviruses, respiratory syncytial viruses and metapneumoviruses, are also potential causes, particularly in patients who are experiencing reinfection.⁶⁶

The common cold is predominantly transmitted via direct contact. Individuals can become infected if they come into close contact with infected individuals, for instance, through handshaking, hugging or kissing.⁶⁷ Since cold viruses can remain viable on surfaces, like phones or doorknobs, for several hours, indirect contact transmission occurs when uninfected individuals touch contaminated surfaces and then touch their nose, mouth or eyes. Transmission can also occur through inhalation of droplets containing viruses which are coughed or sneezed into the air by infected individuals.⁶⁸

The common cold may exacerbate respiratory diseases, such as asthma and chronic bronchitis. It can lead to complications like purulent sinusitis and otitis media, either due to the viral infection itself or from secondary bacterial infection.⁶⁶ In severe cases, individuals may develop bronchitis or pneumonia.⁶⁷

3.2 Risk factors

Interestingly, exposure to cold weather and temperatures, host health and nutrition intake, or presence of upper respiratory tract abnormalities like enlarged tonsils or adenoids, are not associated with an increased susceptibility to the common cold.⁶⁶

On the other hand, younger age, underlying medical conditions, and lifestyle factors can increase the risk or severity of the common cold. Factors include:⁶⁹⁻⁷¹

- Infants and children, who are more susceptible to the common cold due to a maturing immune system;
- Individuals with weakened immune systems or chronic medical conditions;
- Staying indoors and in close contact with infected individuals;
- Low humidity, leading to dry nasal passages which are more susceptible to cold viruses;
- Inadequate or poor-quality of sleep;
- Psychological stress; and
- Smoking.

3.3 Signs and symptoms

Common cold symptoms are caused by the immune response to the infection rather than tissue damage in the airways.⁶⁵ Local symptoms, such as sneezing, rhinorrhoea, nasal congestion, cough and sore throat, are developed when viral infection triggers the synthesis of bradykinin and prostaglandins in the airways.⁷²

Prostaglandins play a significant role in the inflammatory process as they potentiate the effect of bradykinins, stimulating pain nerve endings and causing sore throat, earache, sinus pain and hyperreactivity of the cough reflex.⁷² The release of these pro-inflammatory and vasoactive mediators also contributes to local vasodilation and swelling of the nasal mucosa, resulting in nasal congestion.²⁵ Sneezing and rhinorrhoea are caused by activation of the parasympathetic pathways, leading to secretion of watery nasal discharge from the nasal

glands.⁷² They are thought to result from an inflammatory response to viral infection rather than through the release of histamine.⁷³ Conversely, systemic symptoms, such as fever and headache, are associated with the release of cytokines from macrophages and leukocytes in response to the viral infection. Circulating cytokines then increase prostaglandin levels in the brain, triggering fever and headache as well as initiating pain.⁷²

The incubation period for the common cold is 24 to 72 hours, although it can be as short as 10 to 12 hours. A scratchy or sore throat and sneezing are usually the first signs of the common cold, followed by profuse nasal discharge, congestion and cough.¹ Nasal discharge is watery during the first two days, but then become more mucoid and purulent after two to three days.⁶⁶ Body temperature is usually normal for adults, but infants and children may experience low- to moderate-grade fever. Symptoms of the common cold usually peak within two to three days and resolve within 10 to 14 days.⁶⁹

Signs and symptoms of the common cold include:^{67, 69}

- Sore throat;
- Runny nose;
- Coughing;
- Sneezing;
- Stuffy nose;
- Post-nasal drip;
- Mild headaches and body aches;
- Mild to moderate fever (<39°C, <102°F), more common in children but rare in adults;
- Watery eyes; and
- General malaise.

3.4 Red-flag symptoms

In addition to the listed red-flag symptoms under Chapter 2.3.2, pharmacists should also refer patients with the following symptoms for further investigation:^{46, 50-52}

- Fever $\geq 39^{\circ}\text{C}$ (102°F) or chills in adults;
- Fever for five days or more, or fever returning after a fever-free period in adults;
- Fever $\geq 38^{\circ}\text{C}$ (100°F) in infants;
- Rising fever or fever lasting more than two days in children of any age;
- Symptoms that do not improve or that worsen in children;
- Excessive irritability in children;
- Lack of appetite or poor feeding in children;
- Bulging in the soft spot of the skull in children (bulging fontanelle);
- Symptoms of meningitis (severe headache, high fever, neck pain or stiffness, photophobia);
- Confusion;
- Vomiting;
- Severe diarrhoea; and
- Severe dehydration.

3.5 Pharmacological treatment

As the common cold is usually self-limiting, the use of non-prescription medicines aims to relieve symptoms and improve quality of life while the infection runs its course and resolves over time. Furthermore, the use of medicines not only aids in restoring normal nasal function, but may also help prevent secondary complications.²⁵

Selecting the most optimal treatment products can be overwhelming for some patients due to the plethora of available medicines, brands and formulations available. Some formulations contain irrational combinations,

such as an expectorant and a cough suppressant, and other combination medicine products may contain subtherapeutic doses of active ingredients. Therefore, it is important that pharmacists avoid recommending such products. Single-ingredient products are still preferred due to greater dosing flexibility as well as reduced risk of confusion, inadvertent overdose, or inadvertent underdose.⁵⁰ Nonetheless, some patients may prefer combination products, and pharmacists should use their professional judgement to counsel patients on the most appropriate product.

Paracetamol (acetaminophen), aspirin (acetylsalicylic acid, ASA) and non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen and naproxen, are commonly used analgesics to manage fever, headache and sore throat. They are available as single-ingredient products or are combined with other medicines, such as antihistamines or nasal decongestants. They are available in different formulations, including tablets, capsules, effervescent tablets, drinks, syrups and suspensions.⁵⁰

These analgesics have a similar mechanism of action in relieving fever and pain symptoms as they inhibit prostaglandin synthesis, thereby reducing the effect of bradykinin and stimulation of pain nerve endings in the upper airways.⁷² It is postulated that paracetamol inhibits prostaglandin synthesis along the pain pathways in the central nervous system, whereas aspirin and NSAIDs inhibit prostaglandin synthesis in the central nervous system and peripheral tissues.⁷² Paracetamol can give rise to liver toxicity if its maximum daily dose of 4g is exceeded in adults and children over 16 years old.⁷⁴ On the other hand, aspirin and NSAIDs can be associated with increased risks of peripheral, gastrointestinal, cardiovascular and renal adverse effects, particularly in cases of dehydration.⁵⁰ Therefore, paracetamol is usually recommended first-line for patients with multimorbidity or polypharmacy issues due to its more favourable safety profile.²⁵ As such, the appropriate choice of an analgesic should take into account a patient's comorbidities and analgesic experience and response.

As for treatment of rhinorrhoea and sneezing, antimuscarinic agents, like ipratropium and first-generation antihistamines such as brompheniramine, chlorphenamine, diphenhydramine, doxylamine and promethazine, can be used to dry respiratory secretions.⁵⁰ When administered nasally, ipratropium blocks the parasympathetic signalling that leads to rhinorrhoea, whereas first-generation oral antihistamines are useful for their anticholinergic and sedative properties.^{25, 72}

Ipratropium and sedating antihistamines are effective in the control of excessive sneezing and nasal secretions, but less effective in relief of nasal congestion. All first-generation antihistamines can cause drowsiness because they cross the blood-brain barrier. Many of them are therefore recommended for night-time use. According to the British National Formulary, promethazine may be more sedating, whereas chlorphenamine may not have as strong a sedative effect.⁷⁵ Non-sedating second- and third-generation antihistamines like cetirizine, fexofenadine and loratadine have not been demonstrated to be effective against common cold symptoms, which are independent of histamine activity involvement. So these drugs should be avoided in the management of such symptoms.⁷³

Sympathomimetics, also known as vasoconstrictors or nasal decongestants, are the cornerstone of treatment for nasal congestion. They mainly act on the alpha-adrenergic receptors by mimicking the effect of noradrenaline, which mediates constriction of dilated blood vessels, reduces nasal blood flow and mucosal swelling, and eases congestion and breathing.^{3, 25} Sympathomimetics are available as topical and oral formulations, which each have their own benefits and risks. For instance, topical decongestants provide a rapid onset of action, but chronic overuse for even relatively short periods (three to seven days) can lead to rebound nasal congestion, whereas more prolonged use can lead to rhinitis medicamentosa (rebound congestion), with alterations of the nasal mucosa.⁷⁶

Oral decongestants do not cause rebound congestion, but provide a slower onset of action and are at greater risk of causing systemic adverse effects.⁵⁰ Both formulations have, however, been shown to be effective in relieving nasal congestion.²⁵ Interestingly, nasal decongestants may be useful for individuals travelling by air and affected by a common cold: they help shrink inflamed ear membranes and reduce ear pain caused by changes in air pressure during flight ascent and descent.^{25, 68} A summary comparison of topical and oral decongestants is presented in Table 2.

Table 2 — Summary comparison between topical and oral nasal decongestants²⁵

Characteristics	Topical decongestants	Oral decongestants
Medicines or active ingredients	Naphazoline Oxymetazoline Tramazoline Xylometazoline Ephedrine Phenylephrine	Phenylephrine Pseudoephedrine
Onset of action	2 to 5 minutes	Up to 30 minutes
Duration of action	Effect lasts for up to 6 hours (up to 4 hours with phenylephrine; up to 10 hours with xylometazoline)	3 to 6 hours (depending on dose and formulation)
Duration of use	Depends on the active ingredient (check product information)	No specific limitation, but not recommended for long-term use due to vasoconstricting adverse effects
Potential adverse effects	<ul style="list-style-type: none"> • Transient burning, stinging, local irritation, dryness of nasal mucosa • Rebound congestion 	<ul style="list-style-type: none"> • Restlessness • Irritability and agitation • Anxiety • Tremor • Insomnia • Hypertension • Palpitations • Tachycardia

Cough suppressants, including dextromethorphan, codeine, dihydrocodeine and pholcodine, are indicated for relief of dry cough. They act directly on the cough centre to depress the cough reflex.¹ Health Canada recommends against the use of these non-prescription cough suppressants in children under the age of six years due to the lack of demonstrated benefit.⁷² The benefit is unclear, but is likely small, in adults. Expectorants and mucolytics are used to relieve productive coughs.

Non-prescription medicines for symptomatic relief of the common cold are summarised in Table 3.

3.6 Non-pharmacological treatment

Non-pharmacological treatment and self-care interventions for management of the common cold include:^{46, 50}

- Drinking plenty of fluids (warm drinks may soothe a sore throat and loosen congestion);
- Avoiding drinks that can cause dehydration (e.g., caffeine or alcohol);
- Using vaporisers to warm and moisten the air;
- Inhaling steam during a hot shower to relieve a blocked or runny nose (children should be supervised during steam inhalation to reduce risk of burns);
- Applying ointments to soothe dry, cracked skin around the nose;
- Sucking a lozenge and drinking honey and lemon to relieve sore throat and cough;
- Eating regular, healthy meals, and limiting sugar, salt, and fat intake;
- Limiting alcohol intake;
- Taking plenty of sleep and rest;
- Avoiding respiratory irritants, such as smoke, air pollutants and dust; and
- Using isotonic or hypertonic saline solutions to rinse the nasal cavities.

4 Influenza

4.1 Background

Influenza, or flu, is an acute respiratory infection caused by influenza viruses that affect the upper respiratory tract. It is contagious and affects all parts of the world, representing a year-round disease burden.⁷⁷ It can cause mild to severe symptoms and, at times, can lead to hospitalisation and death, particularly among vulnerable groups, such as children, the elderly, pregnant women and individuals with chronic medical conditions.⁷⁷

Influenza viruses are classified into four types: A, B, C and D.⁷⁸ Type A viruses are further classified into subtypes depending on the genes that make up the surface proteins, namely the haemagglutinin (H) and neuraminidase (N) surface proteins. There are 18 different HA subtypes and 11 different NA subtypes, and they are named by combining the H and N numbers, for instance A(H1N1) and A(H3N2). The A(H1N1) and A(H3N2) are viruses that routinely circulate among individuals. Instead of being categorised into subtypes, influenza B viruses are classified into lineages. Each lineage that circulates varies by geographic location. Influenza C viruses usually cause mild symptoms, and thus are deemed not to cause human flu epidemics. Influenza D viruses are also not known to infect or cause illness in humans and mainly affect cattle.⁷⁸

The two main types of influenza which can cause seasonal epidemics each year are thus the type A and B viruses. Seasonal epidemics occur mainly during winter in temperate climates, whereas influenza can occur throughout the year in tropical regions, leading to more irregular outbreaks.⁷⁷ Similarly to the common cold, influenza is spread via direct contact, indirect contact and airborne transmission.⁷⁸

Most people recuperate from influenza in less than two weeks, but some individuals may develop complications. Moderate complications of influenza include sinus and ear infections, whereas serious flu complications can result in pneumonia from either the influenza itself or from co-infection with other virus or bacteria.⁷⁸ Other possible serious complications of flu include myositis, rhabdomyolysis, myocarditis, encephalitis, sepsis and multi-organ failure.⁷⁸ Influenza may potentially exacerbate chronic cardiovascular conditions and respiratory disease, like asthma.

4.2 Risk factors

Although all individuals can be affected by influenza, there are certain groups of people who are at a higher risk of acquiring influenza infection or developing disease complications. They include:⁷⁹

- Children under five years old;
- The elderly;
- Pregnant women;
- Individuals with chronic medical conditions (such as cardiovascular, haematological, pulmonary, renal, metabolic, hepatic or neurodevelopmental diseases);
- Individuals with immunosuppressive conditions (such as malignant diseases or HIV/AIDS) or individuals receiving steroids or chemotherapy; and
- Healthcare workers.

4.3 Signs and symptoms

As compared with the common cold, the onset of influenza symptoms is more sudden. Cough can be severe and last for two or more weeks.⁷⁷ Individuals are the most contagious in the first three to four days after their symptoms begin.⁷⁸ The USA CDC reports that “most healthy adults may be able to infect others beginning one day before symptoms develop and up to five to seven days after becoming sick”. The incubation period is about two days, but ranges from one to four days.⁷⁷

Signs and symptoms of influenza include:⁷⁸

- Fever;
- Chills;
- Marked muscle or body aches;
- Runny nose;
- Stuffy nose;
- Coughing (usually dry cough);
- Sore throat;
- Fatigue;
- Headache;
- Severe malaise; and
- Vomiting and diarrhoea (more common in children, rare in adults).

4.4 Red-flag symptoms

In addition to the listed red-flag symptoms under Chapter 2.3.2, pharmacists should also refer patients with the following symptoms for further investigation:^{46, 50-52}

- Fever $\geq 39^{\circ}\text{C}$ (102°F) or chills in adults;
- Fever for five or more days or returning after a fever-free period in adults;
- Fever $\geq 38^{\circ}\text{C}$ (100°F) in infants;
- Rising fever or fever lasting more than two days in children of any age;
- Symptoms that do not improve or that worsen in children;
- Excessive irritability in children;
- Lack of appetite or poor feeding in children;
- Bulging in the soft spot of the skull in children (bulging fontanelle);
- Symptoms of meningitis (severe headache, high fever, neck pain or stiffness, photophobia);
- Confusion;
- Vomiting;
- Severe diarrhoea; and
- Severe dehydration.

4.5 Pharmacological treatment

Treatment of influenza is primarily symptomatic for individuals with uncomplicated seasonal influenza. Patients who are at high risk of developing severe or progressive complications from influenza may benefit from the use of antiviral agents.⁷⁸ The WHO recommends the use of neuraminidase inhibitors, such as oseltamivir, peramivir and zanamivir, as treatment for influenza. Oseltamivir and zanamivir are also used as prevention for influenza.⁷⁸ These antiviral agents work by inhibiting viral neuraminidase and reducing the replication of influenza A and B viruses.⁸⁰ Neuraminidase inhibitors should ideally be taken within 48 hours of symptom onset; administration after this time frame may be less effective.⁷⁸

Early treatment may reduce the duration of the flu as well as complication risks.²⁵ The WHO recommends treatment for a minimum of five days, but adds that this can be extended until satisfactory clinical improvement is observed.⁷⁸ Neuraminidase inhibitors are generally well-tolerated, and have minimal gastrointestinal adverse effects.³⁹ Adamantanes, such as amantadine and rimantadine, are active against influenza A viruses but not against influenza B viruses. Nevertheless, they are not recommended for the treatment of influenza due to the increasing resistance trend.⁸⁰

Non-prescription medicines for symptomatic relief of influenza are summarised in Table 3.

4.6 Non-pharmacological treatment

Non-pharmacological treatment and self-care interventions for management of influenza include:^{46, 50}

- Drinking plenty of fluids (warm drinks may soothe a sore throat and loosen congestion);
- Avoiding drinks that can cause dehydration (e.g., caffeine or alcohol);
- Using vaporisers to warm and moisten the air;
- Inhaling steam during a hot shower to relieve a blocked or runny nose (children should be supervised during steam inhalation to reduce burns risk);
- Applying ointments to soothe dry, cracked skin around the nose;
- Sucking a lozenge and drinking honey and lemon to relieve sore throat and cough;
- Eating regular, healthy meals and limiting sugar, salt and fat intake
- Taking plenty of rest; and
- Avoiding respiratory irritants (e.g., smoke, air pollutants, dusts, etc.).

4.7 Flu vaccination

Receiving an annual flu vaccination is the most effective method of preventing influenza infection. Vaccination has been associated with reduction of risk of flu infection and transmission, hospitalisation, and risk of flu-related death in at-risk individuals as listed in Chapter 4.2.⁷⁷ Immunity from vaccination wanes over time, so the WHO recommends annual vaccination to protect against influenza.⁷⁷

The flu vaccine contains a combination of different strains of the influenza virus and is created seasonally. Strains are selected based on research that predicts which will be the most common for the upcoming flu season, and recommended by the [WHO Global Influenza Programme](#). Flu vaccines can contain three or four different researched strains of influenza for the upcoming season, named trivalent or quadrivalent vaccines, respectively.⁸¹ Trivalent vaccines include two subtypes of influenza A viruses and one influenza B virus, whereas quadrivalent vaccines include an additional influenza B virus.⁷⁷

Flu vaccines work by activating the development of antibodies that will provide protection against circulating influenza viruses.⁸² Immunity is usually achieved two weeks after vaccination.⁸² Influenza vaccines are available as:⁸²

- Quadrivalent inactivated flu vaccines;
- Live attenuated flu vaccines (available as a nasal spray);
- Cell-based flu vaccines;
- Recombinant flu vaccines;
- Adjuvanted vaccines; and
- High-dose flu vaccines.

Every individual of six months of age or older should receive an influenza vaccine every season with rare exception. Individuals allergic to an ingredient in a flu vaccine, like egg proteins, or gelatine and antibiotics, should not receive a flu vaccine without a consultation with a medical practitioner.⁸²

Among healthy adults, influenza vaccine provides protection, even when circulating viruses do not exactly match the vaccine viruses. In the elderly, influenza vaccination may be less effective in preventing illness but still provides protection by reducing the severity of disease and the likelihood of complications and death.⁷⁷

In some countries and territories, pharmacists' scope of practice has been expanded to include vaccination. This allows pharmacists to reinforce their role as first-line, easily accessible primary healthcare professionals. For more information on flu vaccination by pharmacists, consult recent FIP publications, including:

- [“FIP vaccination handbook for pharmacists: Procedures, safety aspects, common risk points and frequent questions”](#),
- [“Building vaccine confidence and communicating vaccine value”](#) and
- [“Give it a shot: Expanding immunisation coverage through pharmacists”](#).

5 Sinusitis

5.1 Background

Sinusitis is a chronic or acute inflammatory condition affecting the nose and paranasal sinuses.⁸³ Sinuses are air-filled spaces inside the bones of the face, which are located in the cheeks (maxillary), forehead (frontal) and around the eyes (ethmoidal), and they are connected to the nose and throat via narrow channels called ostia.^{15, 84} Under normal circumstances, sinuses aid in warming and moistening inhaled air, in addition to producing mucus to trap airborne aggressors and prevent infection.⁸⁴ Sinusitis is usually a complication of the common cold, whereby sinuses become blocked and filled with fluid, leading to production of thick nasal secretions and swelling of the lining of the sinuses and nose.^{83, 84}

5.2 Risk factors

Certain factors increase a person's susceptibility to sinusitis, including:⁸⁴

- Frequent colds (especially for young children);
- Active or passive cigarette smoking;
- Regular use of nasal decongestant sprays (for more than two to three days);
- Untreated hay fever or other allergies;
- Structural abnormalities of the nose;
- Nasal polyps; and
- Dental disease, such as untreated tooth abscess.

5.3 Signs and symptoms

Signs and symptoms of sinusitis include:¹⁵

- Swelling, pressure and/or pain around eyes, cheeks, nose and forehead;
- A feeling of pressure or fullness in the ears;
- Post-nasal drip;
- Nasal congestion;
- Thick, yellow-greenish nasal discharge;
- Sore throat;
- Aching of upper jaw or teeth;
- Halitosis; and
- Fever (an indication that infection has spread beyond the sinuses).

5.4 Red-flag symptoms

In addition to the listed red-flag symptoms under Chapter 2.3.2, pharmacists should also refer patients with the following symptoms for further investigation:^{46, 50-52}

- Fever $\geq 39^{\circ}\text{C}$ (102°F) or chills in adults;
- Fever for five or more days or returning after a fever-free period in adults;
- Fever $\geq 38^{\circ}\text{C}$ (100°F) in infants;
- Rising fever or fever lasting more than two days in children of any age;
- Symptoms that do not improve or that worsen in children;
- Excessive irritability in children;
- Lack of appetite or poor feeding in children;
- Bulging in the soft spot of the skull in children (bulging fontanelle);

- Symptoms of meningitis (severe headache, high fever, neck pain or stiffness, photophobia);
- Confusion;
- Vomiting and diarrhoea; and
- Severe dehydration.

5.5 Pharmacological treatment

Treatment is primarily symptomatic for individuals with sinusitis. Analgesics and antipyretics are used as the main treatment for pain and fever, whereas oral or nasal sympathomimetics can be used to remove nasal secretions.³ Antibiotics are not routinely recommended unless patients have severe symptoms related to a bacterial infection, such as purulent discharge, congestion or pain, including severe symptoms and high fever lasting for three days, symptoms lasting longer than seven days with unilateral maxillary sinus tenderness and purulent discharge, and worsening symptoms after initial improvement.¹

Non-prescription medicines for symptomatic relief of sinusitis are summarised in Table 3.

5.6 Non-pharmacological treatment

Non-pharmacological treatment and self-care interventions for management of sinusitis include:^{46, 50, 75}

- Drinking plenty of fluids (warm drinks may soothe a sore throat and loosen congestion);
- Avoiding drinks that can cause dehydration (e.g., caffeine or alcohol);
- Using vaporisers to warm and moisten the air;
- Inhaling steam during a hot shower to relieve a blocked or runny nose (children should be supervised during steam inhalation to reduce burns risk);
- Inhaling steam with the addition of menthol or eucalyptus to clear nasal congestion;
- Applying ointments to soothe dry, cracked skin around the nose;
- Sucking a lozenge and drinking honey and lemon to relieve sore throat and cough;
- Eating regular, healthy meals and limiting sugar, salt and fat intake;
- Taking plenty of rest; and
- Avoiding respiratory irritants (e.g., smoke, air pollutants, dusts, etc.).

Table 3 — Non-prescription medicines for symptomatic management of the common cold, influenza and sinusitis ^{1, 25, 46, 50, 76, 85}

This list is not exhaustive.

Non-prescription medicines	Indications	Adverse effects	Considerations	Potential drug interactions	Notes on patient counselling
Paracetamol (acetaminophen)	<ul style="list-style-type: none"> Fever Sore throat Sinus pain Muscle ache Headache 	<ul style="list-style-type: none"> Increased aminotransferase levels Liver toxicity in overdose Hypersensitivity reactions (rare) 	Dose reduction is required in liver disease. Refer to local protocol or product information for dosing guide.	Increased risk of paracetamol toxicity: <ul style="list-style-type: none"> Warfarin Anti-epileptic medicines (e.g., carbamazepine) P450 enzyme inducers (e.g., isoniazid, rifampin) Alcohol 	Patients should be advised to use only one product at a time and to avoid using other products containing paracetamol. Patients with renal or hepatic impairment should seek medical advice before taking medicines containing paracetamol. Dosing may also need to be adjusted for children depending on age and weight. As with the use of any medicine during pregnancy, pregnant persons should seek medical advice before taking paracetamol. The lowest effective dose and shortest duration of treatment should be considered. There is no evidence that paracetamol prevents febrile seizures.
Non-steroidal anti-inflammatory drugs (NSAIDs): <ul style="list-style-type: none"> Ibuprofen Naproxen Aspirin	<ul style="list-style-type: none"> Fever Sore throat Sinus pain Muscle ache Headache 	<ul style="list-style-type: none"> Gastrointestinal adverse effects (e.g., nausea, dyspepsia, bleeding, diarrhoea) Dizziness Potential exacerbation of asthma 	Dehydration increases the risk of NSAIDs' adverse effects in children and the elderly. Oral NSAIDs may lead to renal adverse effects (e.g., decrease in glomerular filtration rate, fluid retention, hypertension, interstitial nephritis). Oral NSAIDs are metabolised by CYP P450 enzymes and are heavily protein-bound. Mucosal	Increased drug levels with oral NSAIDs and aspirin: <ul style="list-style-type: none"> Lithium Methotrexate Increased risk of bleeding with oral NSAIDs and aspirin: <ul style="list-style-type: none"> Some selective-serotonin reuptake inhibitors Some tricyclic antidepressants Warfarin Novel oral anticoagulants Antiplatelet drugs 	Patients should be advised to use only one product at a time as there is no benefit in taking combination NSAIDs and/or aspirin. Patients should be counselled to take NSAIDs and aspirin with food to minimise gastrointestinal adverse effects. Patients should be educated on how to monitor for signs of adverse effects, for instance, black stools, coffee-ground vomit, swollen ankles and

Non-prescription medicines	Indications	Adverse effects	Considerations	Potential drug interactions	Notes on patient counselling
			<p>bleeding can be a major issue with severe hepatic dysfunction.</p> <p>Chronic use of NSAIDs and aspirin may increase risk of gastrointestinal ulcers and lesions.</p> <p>Oral NSAIDs should be used for the shortest period possible in patients with cardiovascular disease.</p> <p>Aspirin should be avoided in people with aspirin-sensitive asthma.</p>	<ul style="list-style-type: none"> Corticosteroid <i>Ginkgo biloba</i> <p>Decreased antihypertensive efficacy with oral NSAIDs:</p> <ul style="list-style-type: none"> Angiotensin-converting enzyme inhibitors Angiotensin II receptor blockers Diuretics 	<p>dyspnoea, and referred for medical help if they arise.</p> <p>Oral NSAIDs are contraindicated in severe gastrointestinal bleeding, active peptic ulcer disease, renal impairment and severe hepatic impairment.</p> <p>As with the use of any medicine during pregnancy, pregnant persons should seek medical advice before taking NSAIDs.</p> <p>Aspirin should not be recommended to children under 16 years due to the risk of Reye's Syndrome.</p>
First-generation antihistamines: <ul style="list-style-type: none"> Brompheniramine Chlorphenamine Diphenhydramine Doxylamine Promethazine 	<ul style="list-style-type: none"> Sneezing Rhinorrhoea 	<ul style="list-style-type: none"> Drowsiness Dizziness Sedation Fatigue Headache Blurred vision Dry eyes or mouth Constipation Urinary retention Paradoxical stimulation (rare) in children 	<p>Anticholinergic adverse effects can be a concern for elderly patients, as they may contribute to a falls risk. They should be avoided in the elderly if possible.</p> <p>Sedating antihistamines should be used with caution in individuals with closed-angle glaucoma, pyloroduodenal obstruction or bladder neck obstruction, and in those who are taking monoamine oxidase inhibitors.</p>	<p>Increased central nervous system depression with sedating antihistamines:</p> <ul style="list-style-type: none"> Alcohol Barbiturates Benzodiazepines <p>Increased anticholinergic side effects when used with:</p> <ul style="list-style-type: none"> Tricyclic antidepressants Other drugs with anticholinergic adverse effects 	<p>Sedating antihistamines are safe to be used in pregnancy; brompheniramine and doxylamine are considered safe, whereas alternative agents should be considered for diphenhydramine and promethazine in breastfeeding.</p>
Antitussives: <ul style="list-style-type: none"> Dextromethorphan Dihydrocodeine Pholcodine 	<ul style="list-style-type: none"> Dry cough 	<ul style="list-style-type: none"> Drowsiness Dizziness Headache Nausea Dry mouth Constipation Respiratory depression (if overdosed) Central nervous system excitation 	<p>Antitussives should be avoided in people with asthma and chronic obstructive pulmonary disease. They are not indicated for conditions with excessive respiratory secretions.</p> <p>Dose reduction may be required in elderly people and individuals with hepatic</p>	<p>Dextromethorphan has an increased risk of serotonin toxicity when combined with other serotonergic medicines, for instance selective-serotonin reuptake inhibitors, monoamine oxidase inhibitors and tramadol. Because dextromethorphan is metabolised by CYP-450 2D6 isoenzyme, it may interact with strong CYP2D6 inhibitors</p>	<p>Patients should be counselled to avoid alcohol consumption while taking antitussives.</p> <p>Antitussives are safe to be taken in pregnancy and breastfeeding; however, it is highly recommended to monitor infants for signs of drowsiness, irritability and poor feeding if mothers take them.</p>

Non-prescription medicines	Indications	Adverse effects	Considerations	Potential drug interactions	Notes on patient counselling
		(e.g., convulsions, confusion if overdosed)	impairment. Refer to local protocol or product information for dosing guide. Professional judgement should be exercised for potential dependence and abuse cases.	such as fluoxetine, sertraline, bupropion and quinidine.	
Expectorants: • Guafenesin	• Productive cough	• Nausea • Vomiting • Diarrhoea		Expectorants are generally free from clinically significant drug interactions.	Guafenesin exhibits some antitussive action via inhibition of cough reflex sensitivity in patients with URTIs. Guafenesin is safe to be used in pregnancy and is considered safe in breastfeeding (limited data). Senega and ammonia mixture is not recommended during pregnancy due to potential uterine stimulant effects of senega; avoid use in breastfeeding.
Mucolytic: Bromhexine	• Productive cough	• Nausea • Vomiting • Diarrhoea • Headache • Dizziness • Allergic reactions	Bromhexine is not recommended for individuals with asthma or chronic obstructive pulmonary disease. Bromhexine may disrupt the gastric mucosal barrier in individuals with peptic ulcer disease.	Bromhexine is generally free from clinically significant drug interactions.	Patients should be counselled to monitor for signs of allergic reactions and seek medical attention if rash or swelling occurs.
Demulcents: • Honey • Simple linctus (citric acid)	• Dry cough	• Generally well-tolerated	Honey should be avoided in children of aged less than one year due to risk of intestinal botulism.	Demulcents are generally free from clinically significant drug interactions.	Demulcents can be taken undiluted or mixed with other liquids. Demulcents are safe to be taken in pregnancy and breastfeeding.
Topical analgesics (anaesthetics and anti-inflammatories): • Benzocaine • Lignocaine	• Sore throat	• Sensitisation reactions • Oral rinses can cause stinging sensations	Generally, no major cautions for use. Benzylamine mouthwash should not be given to anyone under 13 years of age due to the alcohol	Topical analgesics are generally free from clinically significant drug interactions.	Preparations may contain multiple active ingredients, and thus strength and onset of action may vary. Patients should be advised to be extra cautious with hot food and

Non-prescription medicines	Indications	Adverse effects	Considerations	Potential drug interactions	Notes on patient counselling
<ul style="list-style-type: none"> Flurbiprofen Benzylamine hydrochloride 		<ul style="list-style-type: none"> Mild abdominal symptoms 	content. Allergies to NSAIDs should be considered.		beverages as perception of heat may be altered.
Oral decongestants: <ul style="list-style-type: none"> Phenylephrine Pseudoephedrine 	<ul style="list-style-type: none"> Nasal congestion 	<ul style="list-style-type: none"> Restlessness Irritability and agitation Anxiety Tremor Insomnia Hypertension Palpitations Tachycardia 	<p>Oral decongestants should be used with caution in individuals with hypertension or diabetes as they can elevate blood pressure and alter blood glucose levels. Their use is contraindicated in severe coronary artery disease, severe or uncontrolled hypertension.</p> <p>Oral decongestants may exacerbate benign prostatic hyperplasia, and increase risk of acute closed-angle glaucoma.</p>	<p>Increased risk of hypertensive crisis when taken with oral decongestants:</p> <ul style="list-style-type: none"> Monoamine oxidase inhibitors (during or within 14 days of use) Linezolid Moclobemide 	Patients should be advised to avoid taking oral decongestants before bedtime as they may disturb sleep due to their mild stimulant effect.
Topical decongestants: <ul style="list-style-type: none"> Naphazoline Oxymetazoline Tramazoline Xylometazoline Ephedrine Phenylephrine 	<ul style="list-style-type: none"> Nasal congestion 	<ul style="list-style-type: none"> Transient burning, stinging, local irritation, dryness of nasal mucosa 	Chronic overuse for even relatively short periods (3 to 7 days) or prolonged acute use (more than 10 days in a row) can lead to rhinitis medicamentosa, with alterations of the nasal mucosa.	<ul style="list-style-type: none"> Monoamine oxidase inhibitors 	<p>Topical decongestants can be used in pregnancy and breastfeeding, with the caution of considering any systemic vasoconstrictor effects that might be related to those molecules.</p> <p>Effects of topical decongestants usually last for up to 6 hours (up to 4 hours with phenylephrine; up to 10 hours with xylometazoline).</p>
Nasal saline solutions <ul style="list-style-type: none"> Isotonic Hypertonic 	<ul style="list-style-type: none"> Nasal congestion 	<ul style="list-style-type: none"> Nasal irritation, mostly with hypertonic solutions 	No major cautions for use.	Nasal saline is generally free from clinically significant drug interactions.	Nasal saline is safe to be used in pregnancy and breastfeeding.

Cough and cold remedies should no longer be used in children under six years of age. Products for children between six and 12 years of age may be considered under pharmacists' advice to supplement non-pharmacological treatment.^{86, 87}

6 Conclusion

As evident throughout this handbook, pharmacists play an important role in promoting respiratory health and well-being and supporting self-care, particularly in the area of common and self-limiting URTIs, which are frequent causes of consultations in primary healthcare. Building on the relationship of trust they hold with patients and the public in their communities, pharmacists are well-positioned to educate patients on URTIs, encourage methods of maintaining proper respiratory hygiene, assess patients' symptoms upon clinical presentation, and suggest appropriate non-pharmacological and pharmacological management options. The COVID-19 pandemic accentuated the crucial role pharmacists play in consumers' self-care routines. Self-care involves a variety of actions that patients take to manage their health. Pharmacists play an important role in guiding self-care behaviours in patients and the wider public. Thorough assessment and effective communication are crucial to meaningful self-care counselling. Pharmacists can act as advocates who empower patients and help them make healthy lifestyle choices, recommend appropriate non-prescription medicines and educate consumers about when they should consult a physician.

The aim of this handbook is to directly support pharmacists in their current roles and responsibilities with regard to providing optimal care to patients affected by URTIs. The handbook's summary tables, flowcharts, and detailed sections are readily available for use and integration into local practice settings.

With URTIs placing significant burden on communities, pharmacists may be further called upon to contribute to the prevention and management of such conditions. In some instances, pharmacists are participating in prevention strategies by vaccinating patients against influenza, thereby increasing immunisation coverage and limiting the spread of the virus. Thanks to their trustworthiness, expertise and availability, an expanded scope of practice, including prescribing authority, may also be forthcoming for pharmacists in their continued commitment to patient care and safety. FIP will engage with pharmacists globally to identify further resources and guidance needed in this area as the handbook is used in practice.

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