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Reference: 1. Eccles R, et al. Rationale for Treatment of Common Cold and Flu with Multi-Ingredient Combination. Open Journal of Respiratory Diseases. 2014 May 23; 4:73-82. Sea Benylin® Four Flu Liquid. Each 20 ml liquid contains: Diphenhydramine Hydrochloride 25 mg, Paracetamol 1000 mg; Pseudoephedrine Hydrochloride 45 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg; Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg; Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg; Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg; Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg; Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg. Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg. Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg. Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg. Paracetamol 500 mg; Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0345. Sea Benylin® Four Flu Tablets. Each tablet contains: Diphenhydramine Hydrochloride 12,5 mg. Reg. No. 34/5.8/0345. Sea Benylin® Four Flu Table



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Charting the course: a South African pharmacy roadmap for 2025

Natalie Schellack

"The best way to predict the future is to create it." – Peter Drucker

As we navigate the complex landscape of South African pharmacy in 2025, embracing innovation and shaping our destiny is not merely an aspiration, but a necessity.

The field of medicine has undergone transformative changes over the past three decades, with advances in basic sciences increasingly translated into clinical applications, improving lives and outcomes.¹ The rapid development of mRNA vaccines against SARS-CoV-2 amid a global pandemic exemplifies the convergence of decades of basic science and translational research, saving millions of lives.¹ This breakthrough underscores the potential for innovative pharmaceutical solutions to address urgent global health challenges.

However, these scientific advancements remain unevenly distributed. The COVID-19 pandemic starkly highlighted health inequities within and between nations.^{1,2} As we navigate the complexities of drug pricing and policy changes in South Africa, we must remain cognisant of these global disparities and strive for equitable access to pharmaceutical innovations.^{1,2} Looking ahead, the integration of artificial intelligence (AI) in pharmacy practice and the evolving roles of pharmacists align with broader trends in healthcare. Globally healthcare is transitioning from a reactive model to one that is proactive, personalised, and preventive.^{1,2} For pharmacists, this could mean leveraging AI-powered diagnostic tools, participating in personalised medicine initiatives, and playing a more integral role in interdisciplinary care teams.^{1,2}

In South Africa as we celebrate the achievements in our field and plan for the future, let us heed the call to ensure that our advancements are not confined to the wealthy but are accessible to all South Africans. The journey ahead is as much about technology as it is about our collective values and shared commitment to improving human health. The Pharmaceutical Society of South Africa (PSSA) strives to be the *"undisputed leader and guardian of the pharmacy profession"*, as President Rabali eloquently states.³ But what does true leadership and guardianship entail in a rapidly changing landscape? It demands we confront the complexities of drug pricing, embrace the potential of AI equitably, and empower pharmacists and pharmacy support staff to face a complex interplay of challenges and opportunities.

The success of the 82nd FIP Congress hosted in South Africa – a first for sub-Saharan Africa – is a testament to the dedication and expertise of our pharmacy professionals. As President Rabali notes,³ this achievement positions us as leaders on the global stage. But what are our next steps? South Africa's pharmaceutical landscape remains challenged for economic growth with the high demand of the volume of patients in healthcare, as affordability concerns create financial barriers, and high pricing.

These pressures are multifaceted, stemming from a combination of factors, mostly related to affordability concerns. A substantial portion of the South African population face financial barriers to accessing necessary medications, particularly in the context of chronic diseases with even greater expense. Despite generic medicines offering a more affordable alternative, their uptake can be hindered by various factors, including prescriber preferences, patient perceptions, and regulatory complexities. Therefore, the importance of the Essential Medicine List (EML) and adherence to the EML has been highlighted by Leong et al.⁴ stating, *"consideration of affordability for EML inclusions/exclusions is paramount"*.

Further to this the need for robust economic evaluations and Health Technology Assessments (HTAs) in this context is critical, as highlighted by Leong et al.⁴ Their analysis of four case studies demonstrates how different economic evaluation methods including international reference pricing, cost-minimisation, costeffectiveness, and cost-utility analysis - have influenced decisionmaking by the National Essential Medicines List Committee (NEMLC) and impacted access to medicines in the South African public sector.⁴ The study emphasises that a standardised HTA evaluation process, underpinned by a nationally accepted framework, is necessary for evidence-informed selection of essential medicines.⁴ Furthermore, the significance of cost-effectiveness, affordability, and resource use should be consistently included when making decisions on new interventions. Since the inception of the South African EML in 1996, economic evaluations have evolved from cost-minimisation to more complex model-based cost-effectiveness with budget impact analyses to better inform decisions using the GRADE approach.⁴

While the South African drug pricing environment is primarily shaped by domestic factors, it is important to acknowledge potential influences stemming from global dynamics. For instance, policies enacted during the current United States Trump administration, such as those related to international trade and pharmaceutical innovation incentives, could indirectly affect the strategies of multinational pharmaceutical companies operating in South Africa. Changes to trade agreements could impact the cost of imported pharmaceutical ingredients or finished products. However, it is crucial to assess the magnitude and direction of these effects, as South Africa has its own trade relationships and import/export dynamics. Policies impacting pharmaceutical innovation in major markets like the US could, in the long run, affect the availability of new medicines in South Africa, as companies prioritise markets with higher returns on investment. This highlights the need for South Africa to foster its own research and development capacity and explore alternative innovation models.

Despite the challenges faced by the pharmacy profession in 2024, there are reasons for optimism as we look towards 2025.² While the industry has experienced significant pressures, including pharmacy closures, financial constraints, and workforce shortages, several opportunities for growth and innovation are emerging. The American Society of Health-System Pharmacists' 2025 Pharmacy Forecast highlights key areas of development, including the utilisation of AI and the expanding role of pharmacists in primary care.² These advancements align with the local (National Health Insurance) and global trend towards more proactive, personalised, and preventive healthcare models.^{2,5,6}

In the UK, the introduction of a new cohort of pharmacists who will become prescribers upon registration in 2026 is set to expand pharmacist prescribing services across Great Britain.^{2,6} This development, coupled with changes to pharmacy technician roles and hub-and-spoke dispensing legislation, may allow pharmacists more time to focus on patient-facing care.^{2,6} The integration of technology, such as automated dispensing systems and Al-driven drug interactions analysis, is becoming essential for delivering high-quality care and remaining competitive in the job market. These innovations offer opportunities for pharmacists to enhance their roles and improve patient outcomes.^{2,6}

As we navigate these changes, it is crucial for the pharmacy profession to adapt, embrace innovation, and advocate for policies that support both the industry and patient care. By focusing on these opportunities, pharmacists can continue to play a vital role in improving healthcare outcomes and addressing the challenges that lie ahead.

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Pharyngitis and tonsillitis

Fae Farrer, BPharr

Updated by: Lynda Steyn, Amayeza Information Services Corresponding author, email: lynda@amayeza-info.co.za From: SA Pharmacist's Assistant 16(3)20-22

Abstract

Inflammation of the pharynx (throat) and tonsils due to infection is known as pharyngitis or tonsillitis, respectively. As they form part of the oral cavity, the throat and the tonsils are vulnerable to viral or bacterial infections. Throat infections are most often viral, and resolve on their own. Bacterial throat infections, such as strep throat, are less common, but may lead to complications if left untreated. Common symptoms include sore throat, fever, difficulty swallowing, and fatigue. Symptomatic relief of pain may be in the form of oral analgesics and/or topical relief via gargles, lozenges or throat sprays. These products may contain a painkiller, local anaesthetic, or antiseptic and often contain a combination of these. Non-pharmaceutical measures to relieve sore throat include increasing fluid intake, using saltwater gargles, and humidifying the air. Patients should be referred to the doctor if their symptoms persist beyond a few days, worsen, or are accompanied by severe symptoms such as difficulty breathing or high fever. Understanding the causes, symptoms, and treatment options for pharyngitis and tonsillitis helps ensure effective management and timely medical intervention when necessary.

Introduction

Pharyngitis and tonsillitis are infections causing inflammation in the throat. If the pharynx (or back of the throat) is affected, it is known as pharyngitis, whereas inflammation of the tonsils is called tonsillitis. Inflammation of both the pharynx and tonsils is referred to as pharyngotonsillitis.¹

The pharynx and tonsils

The middle of the pharynx, known as the oropharynx, contains the tonsils on either side at the base of the tongue and connects to the oral cavity.² The tonsils consist of two ovular-shaped mounds of tissue and form part of the immune system's first line of defence against viruses and bacteria entering the mouth.³ This makes them vulnerable to bacterial and viral infections, especially in children. While teenagers and adults are also susceptible to tonsillitis, it is not as common as in children, as tonsil function declines with age.³⁴

Causes of pharyngitis and tonsillitis

The most common causes of pharyngitis or tonsillitis are viruses, such as the viruses that cause the common cold and influenza (flu).^{1,2} Some infections may be bacterial in origin and are typically caused by streptococcal bacteria (also known as strep throat).⁵ Other causes of sore throats include fungi or parasites, as well as irritants such as cigarette smoke.^{1,4}

Babies, young children and school-aged children are considered to be most at risk for tonsillitis as most of the viral infections are spread through close contact.³ Adults working in close environments may be at risk of contracting pharyngitis.⁴ Most cases of pharyngitis and tonsillitis occur during the winter months, when people are more likely to be in close contact indoors.¹

Symptoms

The main symptom of either pharyngitis or tonsillitis is a sore throat.¹

Other symptoms may include:^{1,4,6}

- Fever (low-grade or high-grade)
- Coughing
- Painful swallowing
- Headache
- Loss of appetite
- Nausea
- Fatigue

Table I: Topical sore throat formulations and ingredients⁷

Formulation	Ingredients	Examples
Lozenges	Benzydamine, cetylpyridinium chloride Benzocaine, cetylpyridinium chloride Cetylpyridinium chloride, benzyl alcohol 2,4-dichlorobenzyl alcohol, amylmetacresol Flurbiprofen Ectoine [*]	Andolex-C° Endcol°, Medi-Keel A° Cepacol° Strepsils° Strepsils Intensive° Andolex° Wildberry Pastilles
Gargles	Benzydamine, chlorhexidine Benzocaine, chlorhexidine Dibucaine, cetylpyridinium, benzocaine, benzyl alcohol Povidone-iodine	Andolex-C°, Oranix°, Throflam-Co° Coryx Throat°, Orochlor° Medi-Keel A° Betadine°, Dermadine°, Septadine°
Throat sprays	Benzydamine, chlorhexidine Benzocaine, chlorhexidine Phenol	Andolex-C°, Oranix°, Throflam-Co° Orochlor° Medi-Keel A°

- · Changes in or loss of voice
- Muscle pain
- Earache

Tonsillitis may also present with swollen glands in the neck, pus-filled spots on the tonsils, and bad breath.⁴

Treatment

It is difficult to distinguish between a viral sore throat and a bacterial sore throat based on symptoms alone.¹

Most cases of pharyngitis or tonsillitis are due to viruses, many resolving on their own within 1–2 weeks.^{2,5} Often, the patient with a viral throat infection will also have other viral-related symptoms, such as congestion, runny nose, sneezing and coughing.⁵ Antibiotics should not be used for viral infections, as they are not effective in treating viral infections, and it increases the risk of antimicrobial resistance (AMR).⁶

Antibiotic therapy is recommended only for bacterial tonsillitis and pharyngitis.⁶ Patients with a sore throat due to a bacterial infection (such as strep throat) usually develop a sudden low-grade/mild fever and sore throat without cold symptoms.⁵ Complications, such as rheumatic fever, rheumatic heart disease and kidney disease may occur if tonsillitis or pharyngitis caused by strep bacteria is left untreated.¹

There are a number of options available in the pharmacy for symptomatic relief of a sore throat.

Systemic preparations

Systemic analgesics may provide relief from pain (paracetamol and ibuprofen) and inflammation (ibuprofen). Children and adolescents should not be given aspirin due to the risk of Reye's syndrome.⁴

Topical preparations

Topical throat preparations, which include oral rinses (gargles), sprays and lozenges, help relieve throat pain. Lozenges also help stimulate saliva production which soothes the throat.^{35,6,7}

- Oral rinses coat the mouth and the base of the tongue.
- Throat sprays coat the pharynx. They are not recommended for use in children under the age of six years.
- Lozenges may be a choking hazard in young children and should not be used in children under the age of four years.

Lozenges, gargles and throat sprays may contain painkillers, local anaesthetics and antiseptics, or a combination of these⁷ (see Table I: Topical sore throat formulations and ingredients).

- Benzydamine and flurbiprofen are examples of topical analgesics and may be found in various lozenges, gargles and throat sprays.
- Local anaesthetics, such as benzocaine, lidocaine, phenol, and dibucaine relieve pain through their local anaesthetic effect.
- Cetylpyridinium, hexylresorcinol, chlorhexidine, 2,4-dichlorobenzyl alcohol, amylmetacresol, povidone-iodine and phenol, are added to some topical throat preparations as antiseptics.
- Ectoine^{*} is a natural compound that is added to some lozenges to reduce inflammation and soothe the throat by stimulating saliva production. It is shown to be more effective in relieving a sore throat than gargling with salt water alone.

The following non-pharmaceutical measures may provide relief from a sore throat and include: $^{\rm 3.5.6}$

- Increased fluid intake which assists in keeping the throat moist.
- Home-made gargles with warm salt water (2.5 ml salt in 1 cup water) may ease pain, but are not suitable for small children as they may swallow the water.
- Warm beverages such as tea or honey in warm water can be soothing.
- Cold beverages, ice-cream and jelly are particularly popular with small children and provide some relief from dryness and irritation.
- Humidifying the air prevents irritation from dry air.

When to refer the patient

Patients should be referred to their doctor if symptoms do not improve within two to four days. Symptoms to be aware of include: 1,3,4

- Difficulty breathing or swallowing
- Sore throat lasting seven days or longer
- High fever
- Swollen glands in the neck
- Rash
- Being unable to eat or drink due to pain in the throat

Babies or children who have difficulty in breathing, exhibit extreme "fussiness", fatigue, begin drooling and/or are unable to stay hydrated must be urgently referred to a medical facility

Conclusion

Tonsillitis and pharyngitis are often caused by viral agents and may require symptomatic treatment. If a bacterial agent is involved, an antibiotic may be needed. There are several medications available over-the-counter to provide symptomatic relief from a sore throat.¹ Patients should be reminded that medicated lozenges are not sweets and that they must adhere to dosing instructions. Some products may not be suitable for all patients, and diabetics should be mindful that some lozenges contain sugar. Lozenges should be used with caution in children due to their potential as a choking hazard.^{3,6}

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The flu vaccine: debunking the myths

Amayeza Information Services

Abstract

Influenza (also known as "flu") can present with varying symptoms. While some people may only experience mild illness, influenza can also cause severe disease, resulting in hospitalisation or even death. Vaccination is one of the most effective ways to prevent flu and its complications. Due to the mutating nature of flu viruses and the fact that immunity from the flu vaccine wanes over time, it is recommended that all individuals six months and older (unless contraindicated) receive an annual flu vaccine. Healthcare workers play an important role in addressing misconceptions and debunking myths about vaccines and vaccination. Misconceptions and myths should not discourage anyone from getting the flu vaccine.

Introduction

Influenza or "flu" is an acute viral respiratory infection caused by seasonal influenza viruses.¹ Some people may not experience any symptoms or may only experience mild flu symptoms after being infected. However, flu can also cause severe illness, which can result in serious complications, hospitalisation or death.^{1,2} The flu vaccine is one of the most effective methods to reduce the chance of becoming infected with the flu.^{1,3}

The flu vaccine can be given from six months of age and is recommended for everyone, but particularly for those at high risk of complications of flu and for healthcare workers.¹

This article focuses on some of the misconceptions about the flu vaccine.

Myth: The flu vaccine can give you flu

The flu vaccines available in South Africa are inactivated vaccines.^{1,4} This means that the flu vaccine viruses have been "inactivated" or "killed" and therefore cannot cause flu.³⁻⁵

The points below contain possible explanations as to why some people may get flu symptoms, even after they have been vaccinated against flu:

- The flu vaccine only provides protection against flu viruses; the flu vaccine cannot protect against other circulating viruses.⁴
 Other circulating viruses may cause symptoms like flu, for example, the common cold caused by rhinoviruses.⁵
- The flu vaccine only provides protection against the different strains of flu viruses included in the vaccine.² The trivalent vaccines available in South Africa provide protection against the three different strains included in the vaccine, while the quadrivalent flu vaccine protects against four different strains.^{1,4} Therefore, if a person has been exposed to a flu virus that is different from the viruses in the vaccine he/she may still develop flu.^{2,4}
- After receiving a flu vaccine, it takes about two weeks for the body to develop immune protection. Therefore, if a person has been exposed to the flu virus soon before getting vaccinated or during the two-week period after vaccination (before protection from the vaccine takes effect), the person may not be protected, and he/she may develop flu.²
- Side effects such as body aches and mild fever from the flu vaccine may be confused with symptoms of flu. However, side effects from the vaccine are usually mild and clear within a day or two.^{3,6}
- Some people, for example, immunocompromised people, may not mount a good enough response to the vaccine and may therefore still be at risk of developing flu.²

Myth: If you had the flu vaccine last year, you don't need it this year

For the flu vaccine to work optimally, it is important that the vaccine strains match the circulating strains in the environment as closely as possible. However, the flu viruses have the ability to change or "mutate" in unpredictable ways. If the virus changes enough from one season to the other, the flu vaccine from the previous season will not be effective.^{1,26} Hence the need for an updated flu vaccine every year.^{1-3,5,6}

Every year, the World Health Organization recommends which flu virus strains should be included in the flu vaccines. Their recommendations are based on the circulating flu viruses over the current flu season.¹ This means that the current flu vaccine may differ from the flu vaccine used in the previous season.^{1-3,5,6}

In addition, immune protection produced by the flu vaccine declines over time. To ensure optimal protection, it is necessary to vaccinate against flu every year; even when the flu viruses in the current season have not changed from the previous season.²

Myth: Adults should receive two flu vaccines during the same flu season

Adult patients should only receive one dose of flu vaccine in the same season. Studies have not shown any benefit for adults receiving more than one dose of flu vaccine during the same flu season.^{1,7}

However, children six months through eight years who are being vaccinated against flu for the first time should receive two doses of the vaccine. The immune system is "primed" with the first dose. The second dose provides immune protection and should be administered at least 28 days after the first dose.¹⁴

Myth: It is too late to be vaccinated

The flu season in South Africa is usually during the winter months.¹ It usually begins in the first week of June.⁸ However, the flu season can vary and in the years, it has "started as early as the last week of April or as late as the first week of July".^{12,9}

The best way to prevent flu is to be vaccinated, preferably, before the flu season starts. However, it is never too late to be vaccinated. Getting the flu vaccine later will still provide protection for the rest of the season.^{12,7}

Myth: The flu vaccine cannot be given during pregnancy

Pregnant women are at risk for severe/complicated influenza disease. The flu vaccine is therefore recommended during pregnancy and can be given in all stages of pregnancy and during the postpartum period.^{1,4} Vaccination during pregnancy protects women during and after pregnancy and protects a baby after birth against flu.^{1,4,7,9}

Conclusion

There are quite a few misconceptions about the flu vaccine, which may prevent people from having an annual flu vaccine. Healthcare workers are in the ideal position to dispel these myths. In addition to the flu vaccine, other important measures to prevent the spread of viruses include basic hand hygiene (wash your hands often or use a hand sanitiser) and cough etiquette (cough/sneeze into your elbow or a tissue to limit the spread of germs).^{3,9}

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Painkillers and **immunisation –** yes, or no?

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Abstract

This article discusses the critical role of vaccines in preventing infectious diseases. Vaccinations not only safeguard the individual recipient but also contribute to public health by reducing the spread of infectious diseases in the community. A focus of the article is on the practice of administering painkillers before vaccinations to lessen possible side effects such as pain and fever. The article also offers alternative strategies for pain management during vaccinations and advises on handling postvaccination symptoms such as fever. Key recommendations include the avoidance of aspirin in children due to its association with Reye's syndrome and the importance of maintaining hydration.

Vaccines are amongst the most effective ways to prevent infectious diseases. They're designed to trigger an immune response so that the body can fight off and "remember" specific viruses or bacteria. When the immune system is confronted by those microorganisms at a later stage, it can then react strongly and effectively prevent the disease.¹

Vaccinations not only protect the person that receives them, but they also keep other people safe by eliminating or greatly decreasing infectious diseases that used to easily spread from person to person.²

Parents often want to prevent some of the possible side effects of vaccines, such as pain and fever, by giving their child a dose of a painkiller before taking them for vaccination. There have, however, been some studies done on how this may affect the response of the immune system to the vaccine.

There were two studies done in 2009 that raised concerns about relieving symptoms associated with vaccinations by giving children painkillers before vaccinations. In these studies, it was found that the medications lowered the immune system response to vaccines. Centers for Disease Control and Prevention (CDC) physicians wrote that the 2009 studies made "a compelling case against" routine use of pain-reducing medication before vaccination.^{3,4,5}

More recent studies have also found that prophylactic use of pain and fever medication may affect the immune responses to vaccines. However, the effects vary depending on the vaccine, the medication, and the time of administration.⁶

Researchers acknowledge that the evidence is incomplete, but it is currently considered best to err on the side of caution and not give the medications unless they are truly needed.³

For most people, it is not recommended to avoid, discontinue, or delay medications that they are routinely taking for prevention or treatment of other medical conditions around the time of vaccination. If the patient is taking medication that suppresses the immune system like high doses of cortisone, they should talk to their doctor first before getting vaccinated.⁷

There are other proven ways of reducing pain during vaccination that can be considered.

- Apply topical anaesthetics to numb the skin on the area that will be injected.
- Encourage mothers to breastfeed their infant before, during and after vaccination. Bottle feeding and using pacifiers also soothe infants after vaccination.
- When parents hold the child on their lap during vaccination, or hug them, the child will often stay still and feel more secure.
- Relax and take slow deep breaths. Look away from the needle and it will be over in no time at all. $^{\scriptscriptstyle 3,8}$

What can be done after vaccination:

Fevers can develop as soon as one to two days after vaccination with some inactivated vaccines but may take as long as two to four weeks

It is important to remember that fevers are a normal part of the immune response. Unless the fever that develops is high, or is causing substantial discomfort, the best thing to do is to make sure the patient stays hydrated and drinks plenty of fluids. Another important point to remember is to not give children any aspirin-containing medication as this has been associated with Reye's syndrome.¹⁰

Dosage of paracetamol according to age									
3-12 months 1-5 years 6-12 years Adults									
Oral Given 4–6 hourly Max 4 doses in 24 hours	60–120 mg	120–240 mg	250–500 mg	500–1 000 mg Max 4 g/24 hours					
Rectal Given 4–6 hourly Max 4 doses in 24 hours	60–125 mg	125–250 mg	250–500 mg						
Dose from 1 month old (oral or rectal)	20 mg/kg/dose Given 6 hourly Max 90 mg/kg/24 hours								

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Immune support supplements

Roslynn Steenkamp

Abstract

A strong immune system is vital for defending the body against infection. Innate and acquired immunity are the two main components of the immune system. Each component is made up of multiple, complex processes that work together to maintain health. Lifestyle factors such as diet, exercise, sleep, and stress play significant roles in immunity. Healthy lifestyle behaviours are key to maintaining immune health. The use of immune support supplements containing a variety of vitamins, minerals, dietary constituents, and herbal ingredients has increased globally. Many of these ingredients elicit antimicrobial, anti-inflammatory and antioxidant effects. Used appropriately, immune supplements can be useful in bolstering an impaired immune system.

Introduction

A healthy immune system is needed to protect the body against disease-causing (pathogenic) organisms and to maintain overall health.^{1,2} The immune system is comprised of specialised cells, physical and chemical barriers and antibodies that target and destroy harmful pathogens.² Lifestyle factors such as diet, exercise, sleep, and stress can influence immune function.³ The use of immune support supplements has increased worldwide. These products contain a variety of vitamins, minerals, food components and herbal ingredients which may support immune function and help fight against infection.⁴

The immune system

A healthy immune system is needed to fight off pathogens (diseasecausing organisms) and maintain overall health.¹ Physical barriers such as the skin, as well as the gastrointestinal and respiratory tract prevent pathogens from entering the body. Chemical barriers such as secretions, mucus, saliva and gastric acid also help to keep pathogens out.² Once a pathogen enters the body, the cells of the immune system are activated.

The immune system can be divided into two components:

Innate immunity: The first response to an invading pathogen. Although rapid, it is not a specialised response and is not as effective as the adaptive immune system. Cells of the innate immune system include phagocytes (e.g. macrophages and monocytes), neutrophils, dendritic cells, mast cells, and eosinophils.

Adaptive immunity:_The cells of the adaptive immune system can recognise and remember specific pathogens and launch a specific and effective defence against invaders. Although effective, adaptive immunity is slower to kick-in than the innate immune system. Cells of the adaptive immune system include the T cells (cytotoxic T cells and T helper cells) and antibody-producing B-cells.

These systems work together to rid the body of harmful pathogens. When the immune system is "activated", inflammation in the form of swelling, redness and pain may occur. Although this is a sign that the immune system is doing its job, inflammation itself causes damage to body tissues.¹

Diet and immunity

Good nutrition is key to fighting off infection as the cells of the immune system require energy from food to work effectively. Furthermore, specific nutrients like protein, vitamins, and minerals work together to support the cells and tissues of the immune system. A nutrient-poor diet can lead to malnutrition, which negatively affects health and immunity. Furthermore, unhealthy diets consisting of high levels of sugar and saturated fats and low levels of fibre and essential micronutrients are associated with the development of chronic, low-grade inflammation which increases infection risk.³

Other lifestyle factors

Other lifestyle habits can influence immune function. Moderateintensity exercise benefits immunity. Exercise can also lower stress and anxiety levels, both of which can weaken immunity. Although beneficial in moderation, heavy exercise loads/over-training may impair immune function.

The use of alcohol, tobacco and other substances has a damaging effect on immunity. Managing stress, getting enough sleep, following a healthy diet, and exercising regularly are lifestyle habits recommended for maintaining a healthy immune system.³

Vitamins and minerals

Vitamins and minerals are micronutrients that are needed for many bodily functions, including immune function. Some micronutrients (e.g. vitamin D and selenium) are directly involved in immune cell function, while others act as antioxidants to protect the body against inflammation (e.g. vitamin A, C, and zinc). The best way to meet micronutrient needs is by following a varied diet rich in fruits, vegetables, whole-grains, legumes, low-fat dairy, healthy fats, and meat/meat alternatives. Failing to meet the body's vitamin and mineral needs can lead to deficiencies, which may negatively affect immune function and overall health. In these cases, supplements may be beneficial. Some of the most important nutrients required for immune function include vitamin A, C, B₆, B₁₂, D, E and folate as well as magnesium, zinc, iron, and selenium. These micronutrients are often found in immune-support supplements.³Other nutritional components like omega-3 fatty acids, probiotics, B-glucans, and fibre may support immunity and are therefore also included in many immune supplements.4,5

Herbal ingredients

Medicinal herbs and plant extracts have been used for their therapeutic and immune-supporting qualities throughout history. Many of these natural remedies (e.g. garlic, ginger, and turmeric) are common ingredients in our daily diets and known to elicit antiinflammatory and antioxidant effects.^{45,6} These effects are often

Table I: Herbal ingredients and their effect on immune function

	-
Ingredient	Effect on immune function
African potato	Antioxidant, anti-inflammatory and antibacterial effects. 7
Black cumin	Antibacterial and anti-inflammatory.6
Cardamon	Antioxidant, anti-inflammatory and antimicrobial. It also helps regulate immune cell function. ⁶
Echinacea	May help to treat the common cold and supports innate immune function. ^{45,6}
Elderberry	Rich in polyphenols. Elicits antiviral and anti- inflammatory effects. ⁴
Garlic	May help to treat the common cold.⁵
Ginger	Anti-inflammatory and antibacterial.4,5,6
Ginseng	Anti-inflammatory and antimicrobial. Supports both innate and adaptive immune function. ⁵
Pelargonium	Antiviral, antimicrobial, and anti-inflammatory. Supports innate immune function. ⁸
Quercetin	Antioxidant, anti-inflammatory and antiviral. ⁵
Turmeric	Anti-inflammatory. Helps modulate immune cells. ⁶

attributed to polyphenols, a diverse group of compounds found in plant-based foods.⁵ Some of the most popular herbal ingredients used for immune support are summarised in Table I.

Immune support supplements

With cold and flu season on the horizon, maintaining a healthy immune system has become even more important.^{24,9} Ingredients such as vitamin C, vitamin D, zinc, garlic and echinacea may help to

Table I	I: Examples c	of immune support	supplements
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Supplement name	Active ingredients
Alpha: Colds and Flu Effervescent Tablets	 Vitamin C Elderberry N-Acetyl- Cysteine Caffeine Menthol
Alpha KiddyVite Immune Gummies	 Vitamin C Elderberry Extract Vitamin E Vitamin A Zinc Vitamin D
Cipla: Airmune	 Vitamin A Vitamin C Magnesium Zinc Selenium Manganese Lonicera japonica Forsythia Schizonepeta Ginger Chinese vitex Isatis root Echinacea Beetroot L-glutamine L-lysine
Echinaforce®	• Echinacea
Efferflu-C Immune Booster	Vitamin CEchinaceaZinc
32GI [*] Immunize	 Yeast B-glucan Vitamin C Zinc Vitamin B₁, B₂, B₆ and B₁₂
Nativa: Linctagon [®] C	 Pelargonium Vitamin A Vitamin C Methylsulfonylmethane Zinc Quercetin
Nativa Complex [®] Multi Defence	 Vitamin D Vitamin C Zinc Selenium
NutriPure: Immune Support Adult Gummies	 Vitamin B₆ and B₁₂ Vitamin C Vitamin D Selenium Zinc
Vitality™ Youthful Living: Immune Shield	 Vitamin C Vitamin D₃ Zinc Selenium Pelargonium Quercetin

curb the common cold and have antimicrobial, anti-inflammatory and antioxidant benefits.^{24,5} Immune supplements also often contain numerous herbs, spices, and plant extracts, each contributing to immune function in various ways.

It is important to note that not all ingredients found in immune supplements have been tested for effectiveness and safety in all populations and some may interact with certain medications. It is therefore advised to consult a healthcare professional before choosing to take a supplement.⁴ Common immune support supplements and their active ingredients are summarised in Table II.

Conclusion

A strong immune system is needed to fight off infection and maintain health. A nutritious and varied diet, as well as healthy lifestyle practices are key to supporting immune function. Immune supplements often contain a variety of vitamins, minerals, dietary components, and herbs and can help to support an impaired immune system. Immune supplements should be taken under the guidance of a healthcare professional.

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Nutritional supplements during pregnancy and lactation

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Abstract

Pregnant and breastfeeding women have increased nutrient needs to support the physical changes associated with pregnancy and lactation. Poor nutrition during this time can have negative effects on maternal health and pregnancy outcomes. Women of reproductive age should follow good lifestyle habits before and during pregnancy and eat a variety of nutritious foods to meet their requirements. Nutrients particularly important for pregnancy and lactation include omega-3 fatty acids, folate, iron, vitamin B12, zinc, vitamin D, calcium and choline. Routine multivitamin and mineral supplements may be needed to achieve an optimal nutrition status before, during and after pregnancy. This is especially important for teenage pregnancies, malnourished women, as well as women who follow restrictive diets. Incorrect or excessive supplementation, however, can be harmful, and women are advised to consult a healthcare professional before using supplements.

Introduction

Pregnant and breastfeeding women have increased nutrient requirements to support the development of a growing baby. Poor nutrition negatively affects fertility and pregnancy outcomes.¹ Consuming a nutrient-rich diet is advised to meet nutrient requirements.² Supplements can help prevent deficiencies and maintain health of both mother and baby during pregnancy and breastfeeding.³

Nutrition and pregnancy

Good dietary practices are important during all stages of life, but especially in women of reproductive age.^{1,4} Nutritional requirements for pregnant women differ significantly to those of non-pregnant women. This is due to the physiological changes that occur during pregnancy such as weight gain, increased blood volume, hormonal shifts and the development of milk ducts and alveoli in breast tissue. In addition to all of this, adequate nutrition is needed to support foetal growth and development.⁴

Dietary habits during pregnancy

Many women do not meet recommended nutritional requirements at the time of conception and throughout pregnancy. This is largely due to poor eating habits.^{2,4} Dietary intake may also be affected by gastrointestinal issues such as vomiting, constipation and reflux (which are common during pregnancy).⁴ Adopting a varied diet is the best way to meet nutrient requirements. A healthy diet should include whole grains, fruit, vegetables, legumes, nuts/ seeds, low-fat dairy, healthy fats, and lean meat/meat alternatives.² Current examples of popular diets include the Mediterranean diet, vegan and vegetarian diets as well as intermittent fasting diets. The Mediterranean diet has shown numerous positive effects in pregnancy and birth outcomes, where vegan and vegetarian diets need to be very carefully planned to avoid nutrient deficiencies. Intermittent fasting focuses more on "when to eat", as opposed to the type of food being eaten. A popular intermittent fasting diet is the 8/16 method, which involves eating during an 8-hour window, followed by 16 hours of fasting. Although intermittent fasting may pose some benefits (e.g. improved maternal glucose control), fasting during pregnancy may be associated with low-birth weight and pre-term delivery. Medical supervision is advised in the case of intermittent fasting.5

Nutrition is not a "one size fits all solution", but emphasis should be placed on eating a balanced diet that includes all food groups.⁵

Nutrition and lactation

During lactation, a mother's energy and nutrient needs remain high to support her own health and provide enough breastmilk for her baby. Breastmilk is made from the nutrients stored in the mother's body. Poor nutrition can impact the amount of milk produced, but not its quality.⁶ Following a nutritious diet and consuming prenatal supplements is advised during lactation.²⁶

Macronutrient requirements

Macronutrients (carbohydrates, protein, and fat) are caloriecontaining compounds that provide the body with energy. Protein requirements are higher throughout pregnancy to promote optimal foetal growth, while energy needs are increased during the second and third trimester.⁶ A balanced diet containing sufficient carbohydrates, protein and fat is recommended.⁴ In women who are underweight or follow restrictive diets, a nutritional supplement containing carbohydrates, fat and protein may be useful.⁶

Omega-3 requirements

Omega-3s are polyunsaturated fatty acids (PUFAs) which are essential for foetal brain development and cellular function.⁷ After birth, omega-3s are provided to infants through their mothers' breastmilk.³ The two main types of omega-3s are eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). DHA is particularly important for pregnant women. Fish oil or omega-3 supplements are often recommended during pregnancy as they may decrease the risk of pre-term birth. Supplementation during lactation is also beneficial for growing infants.^{13,4}

Micronutrient requirements

Vitamins and minerals are micronutrients, and each nutrient has a role to play in maintaining overall health and ensuring a healthy pregnancy. The most important micronutrients during pregnancy and lactation include iron, folic acid, vitamin $B_{12'}$ zinc, vitamin D, calcium and choline.^{13,4}

Iron

Iron forms an essential part of red blood cells which transport oxygen around the body. Blood volume increases during pregnancy and the developing baby draws on maternal iron stores to meet their own iron requirements. Iron requirements increase from 18 mg/day to 27 mg/day in pregnancy.⁵ Meat, eggs, poultry, legumes, and fortified grains are good sources of iron.⁶ Iron deficiency in pregnancy can be harmful to mothers and may result in low birth weight in infants.³ Blood loss during birth can also aggravate iron deficiency. If left untreated, iron deficiency leads to anaemia, a condition characterised by poor immune function, fatigue, and impaired foetal development. Iron supplements are recommended before, during pregnancy and during lactation to meet increased requirements and prevent deficiency.^{2,3,6}

Folate

Folate (vitamin B_9) plays a role in DNA replication and cell division. Deficiency of this nutrient may cause babies to be born with neural tube defects such as spina bifida and anencephaly.³ Folate is naturally found in dark green, leafy vegetables, legumes and whole grains.^{6,7} Folate requirements increase significantly during pregnancy (400

ug to 800 ug daily).³ Pregnant women should take additional folic acid (the manufactured form of folate) to meet these requirements. Lactating women also have higher folate requirements (500 ug) and may benefit from a supplement.⁶ Women of reproductive age should take 400 ug of folic acid daily three months before getting pregnant to avoid deficiency at the time of conception.⁵

Vitamin B₁₂

Vitamin B_{12} is required for red blood cell and DNA production. This nutrient is found naturally in meat, eggs, dairy and fortified cereal.⁵ Deficiency of vitamin B_{12} may cause maternal anaemia and affect foetal brain development.⁷ Vitamin B_{12} requirements are slightly higher in pregnancy and lactation (2.6 ug and 2.8 ug daily, respectively).^{3,4} Vitamin B_{12} supplementation may be beneficial during pregnancy. Women following restrictive diets such as veganism and vegetarianism should take a vitamin B_{12} supplement, as this nutrient is predominantly found in animal products.⁷

Zinc

Zinc is known for its role in immune function. It is also essential for proper cell division, as well as protein and DNA synthesis.³ Good sources of zinc include meat, beans, nuts, and fortified cereals.⁶ Zinc deficiency can limit growth and increase the risk of birth defects. Zinc requirements increase from 9 mg to 11 mg daily during pregnancy and lactation, which is why prenatal supplements often contain zinc.³⁶

Vitamin D

Vitamin D is an essential vitamin required for foetal bone development. Vitamin D requirements during pregnancy and lactation do not differ from those of the normal population (600 IU/ day).³ However, insufficient vitamin D can result in bone diseases such as osteomalacia in mothers and rickets in infants. Vitamin D supplementation can help prevent deficiency during pregnancy and breastfeeding.⁵

Calcium

Calcium is needed throughout pregnancy, especially during the last trimester when the baby's skeleton is rapidly developing.^{3,4} Calcium is also essential for adequate breastmilk production and may help treat leg cramping during pregnancy. Calcium requirements increase to up to 1200 mg/day during pregnancy and lactation. Supplementation is advised for pregnant and breastfeeding women.^{3,6}

Choline

Like folate, choline plays a role in several aspects of foetal brain development.⁷ Requirements for choline increase slightly during pregnancy and breastfeeding and women who are not eating sufficient choline-rich foods (e.g. eggs, milk and meat), should consider taking a supplement.⁶

Supplements

There are multiple prenatal supplements available on the shelves. Many of these products include up to three different tablets/capsules that need to be consumed every day. Women of reproductive age are advised to take a "food first" approach to meet requirements, but

Table I: Table showing examples of prenatal/ lactation supplements and the presence of key nutrients for pregnancy and lactation

ropular pre-natal/nactation supplements and key nutrient content									
	Nutrient content per serving/dose								
Supplement	Iron	Folic	B ₁₂	Zinc	Vitamin D	Calcium	Omega 3	Choline	
FUTURELIFE [®] Mothersfood	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
Mom2B Pregnancy Shake	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			
Clicks Pregnancy Supplement with omega-3, calcium and magnesium	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Preg Omega [®] Plus	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Stellar Mama [°]	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Chela-Preg [®] Pre-Natal Multivitamin	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			

supplements may be needed to prevent deficiency.⁶ Some women are more vulnerable to deficiency than others. Those following restrictive diets, teenagers, and mothers with pre-existing health issues/deficiencies may require supplementation.^{1.6} Underweight or malnourished women may benefit from a nutritional supplement containing protein, carbohydrates, and healthy fats.⁶

Although supplements may be beneficial, overdosing or taking multiple supplements at once may have adverse effects and negatively affect pregnancy outcome. Prospective mothers are advised to adhere to the prescribed supplement regimen before, during and after pregnancy and avoid taking multiple supplements containing the same nutrients.^{3,6} Examples of prenatal supplements are highlighted in Table I.

Conclusion

A woman's nutritional status before, during and after pregnancy can greatly affect her health, as well as the health of her child. Deficiencies of key nutrients can impact foetal development and have long-lasting health effects.⁴ In addition to following a nutritious diet, women are advised to take prenatal supplements as recommended by the doctor or clinic. Supplements should be taken according to the prescribed regimen, and care must be taken not to overdose on any nutrient.^{3,6}

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A brief update on **peptic ulcer disease**

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Abstract

An important cause of stomach or upper abdominal pain and discomfort is peptic ulcer disease, which includes gastric and duodenal ulcers. The most common causes of peptic ulcer disease are *Helicobacter pylori* infection and the use of nonsteroidal anti-inflammatory drugs (NSAIDs). The course of treatment for peptic ulcers depends on the underlying cause. Eradication of *H. pylori* is recommended in all patients with peptic ulcer associated with *H. pylori* infection. Acid suppression with a proton pump inhibitor facilitates ulcer healing and is used alone in the treatment of peptic ulcers not due to *H. pylori* or in combination with appropriate antibiotics in the treatment of *H. pylori*-associated peptic ulcer disease.

What is peptic ulcer disease?

A peptic ulcer is a break or "sore" greater than 3–5 mm in size in the inner lining of the stomach or duodenum and occurs when the mucosal lining has been damaged by stomach acid or pepsin (an enzyme in the stomach that digests proteins found in ingested food).¹ There are two types of peptic ulcers:²

- · Gastric ulcers, which form on the lining of the stomach
- Duodenal ulcers, which form on the lining of the upper part of the small intestine (i.e. the duodenum)

What are the causes of peptic ulcer?

Peptic ulcer disease results from an imbalance between factors that protect the mucosa of the stomach and the duodenum, such as mucus and bicarbonate secretion, and factors that cause damage to it, such as gastric acid, pepsin and infection with *Helicobacter pylori* (*H. pylori*).^{3,4}

Infection with H. pylori

H. pylori is a major part of the triad, which includes gastric acid and pepsin, that contributes to peptic ulcer disease.⁴ The unique microbiological characteristics of this bacterial organism allow it to survive for years in the hostile acidic environment of the stomach, where it causes mucosal inflammation and, in some individuals, worsens the severity of peptic ulcer disease.⁴

Although the presence of *H. pylori* in the stomach is common and found in approximately 50% of the world's population, most people with *H. pylori* do not develop ulcers.² Nonetheless, *H. pylori* infection is present in 50–70% of people with duodenal ulcers and in 30–50% of those with stomach ulcers.⁵

Use of nonsteroidal anti-inflammatory drugs (NSAIDs)

NSAID use causes more than 50% of peptic ulcers.⁵ However, most people who take NSAIDs do not develop peptic ulcers.⁵ NSAIDs can cause injury to the lining of the stomach or intestine and make it more vulnerable to damage from gastric acid.² In some cases, this damage can lead to the formation of an ulcer.² The risk of ulcer formation depends on several factors, including the NSAID type (non-selective vs. cyclo-oxygenase [COX]-2 selective), dose, and duration of use.²

Neither the presence of *H. pylori* nor the use of NSAIDs will cause ulcers in every case and other risk factors may also be involved:²

- Genetics appear to play a role as some studies have shown that having a family member with peptic ulcers makes a person more likely to develop ulcers as well.²
- Smokers are more likely than non-smokers to develop peptic ulcers.²
- Other (non-NSAID) medicines (e.g. corticosteroids) and some medical disorders (e.g. Zollinger-Ellison syndrome) can also cause peptic ulcers.²

Although certain foods and beverages can cause stomach upset, there is no good evidence that they cause or worsen ulcers.² Alcohol can irritate the gastric mucosa and cause acidity, but evidence that consumption of alcohol is a risk factor for peptic ulcers is inconclusive.^{1,4}

Severe physiological stress such as burns, central nervous system trauma, surgery and severe medical illness may cause peptic ulcer disease.⁴ However, the role of psychological stress in the formation of ulcers is controversial.² There is some evidence that psychological factors, such as stress, anxiety, and depression may contribute to the development of ulcers as well as the impaired healing and increased recurrence of ulcers.²

What are the symptoms?

Peptic ulcer disease presents with gastrointestinal symptoms like dyspepsia or indigestion, and it can be difficult to distinguish between peptic ulcer disease and dyspepsia based on symptoms alone.³ Some people with peptic ulcers do not have any symptoms.² People who do have symptoms may experience any of the following:^{12,5}

- Stomach or upper abdominal pain or discomfort (often a burning, gnawing, aching or hunger-like feeling)
- Bloating
- Feeling full quickly when eating
- Nausea and vomiting (in severe cases, there may be blood in the vomit)
- Stools that are black or look like tar

Typically, stomach pain occurs within two to three hours after a meal (often during the night) in patients with a duodenal ulcer.^{1,2} Gastric ulcers do not follow the same pattern, and eating may cause pain rather than relieve it.⁵ Taking an antacid may temporarily relieve the pain from peptic ulcers.⁵

Warning symptoms that require prompt referral to the doctor include: $^{\!\!\!\!^{1,4}}$

- Unintentional weight loss
- Problems with swallowing or painful swallowing
- Blood in the vomit or stools
- Recurrent vomiting
- Anaemia
- · Family or personal history of gastrointestinal cancer

Since many of the symptoms of peptic ulcer can also be caused by other conditions, ulcers are often diagnosed through upper endoscopy, which provides an opportunity to see the ulcer and to determine the presence and degree of active bleeding.^{2,4} Furthermore, anyone with a confirmed peptic ulcer should be tested for *H. pylori* so that the infection, if present, can be treated.²

A word on *H. pylori* tests⁶

- Patients may need an *H. pylori* test if they have symptoms of an ulcer.
- The most common *H. pylori* tests use a sample of the patient's breath or stool.
- The *H. pylori* breath test (urea breath test) measures the amount of carbon dioxide in the breath after drinking a solution or taking a capsule that contain urea. *H. pylori* breaks down urea into carbon dioxide. Excess carbon dioxide in the breath is a sign of *H. pylori* infection.
- Antigen tests of a stool sample can detect antigens in the stool that come from *H. pylori*.
- Blood tests for *H. pylori* check for antibodies but cannot differentiate between active infection and a past infection that the antibodies successfully fought off.

Peptic ulcer treatment

The treatment for peptic ulcers depends on the underlying cause.²

Acid suppression

Nearly all peptic ulcers are treated with medicines that suppress acid production and facilitate ulcer healing, such as the proton pump inhibitors (PPIs).² The duration of treatment with a PPI depends on the type and severity of the ulcer and whether infection with *H. pylori* is present.²

Treatment of H. pylori infection

First-line treatment for *H. pylori*-induced peptic ulcer disease is a triple regimen comprising two antibiotics (usually amoxicillin, metronidazole or clarithromycin) and a PPI given for 14 days.^{1,2,7,8} Antibiotics and the PPI work together to eradicate *H. pylori*.¹ The doctor may select the antibiotics based on the presence of antibiotic resistance in the environment.¹

Stopping NSAIDs

Patients taking NSAIDs may need to stop treatment.² In some cases, if the NSAID cannot be discontinued, patients may take a PPI together with the NSAID to protect the lining of the gastrointestinal tract.²

In addition to taking prescribed medicines for peptic ulcer disease and avoiding NSAIDs, patients should be reminded to:²

- Quit smoking
- Limit alcohol intake
- Take antacids if they help relieve symptoms

In summary

It can be difficult to distinguish between peptic ulcer disease and dyspepsia based on symptoms alone.³ Healthcare professionals in the community pharmacy are well-placed to discuss peptic ulcer disease in patients requesting antacids and other over-the-counter acid suppressants for the treatment of dyspepsia-like symptoms and to refer patients with warning symptoms or recurring symptoms to the doctor for further evaluation.

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Dymista[®] Nasal Spray

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Approved indications

Dymista^{*} Nasal Spray is indicated for the treatment of seasonal and perennial allergic rhinitis (including hayfever) and rhinoconjunctivitis in adults if the use of either intranasal antihistamine or corticosteroid alone is not sufficient.¹

Dymista^{*} Nasal Spray is also indicated for short-term treatment of seasonal allergic rhinitis in children over the age of six years if the use of either intranasal antihistamine or corticosteroid alone is not sufficient.¹

Mode of action

Dymista^{*} Nasal Spray contains azelastine hydrochloride and fluticasone propionate, which have different modes of action and show synergistic effects in terms of improvement of allergic rhinitis and rhinoconjunctivitis symptoms:¹

- Azelastine hydrochloride, an antihistamine, works by preventing the effects of substances such as histamine that the body produces as part of an allergic reaction – thus reducing symptoms of allergic rhinitis²
- Fluticasone propionate is a corticosteroid which reduces inflammation.²

Dosage

This medicine is not recommended for children under six years.²

Adults and children (six years and older): One actuation (spray) in each nostril twice daily (morning and evening).¹

For full therapeutic benefit, regular usage is essential. Dymista^{*} Nasal Spray is suitable for long-term use. The duration of treatment should correspond to the period of allergenic exposure.¹

Evidence of efficacy

A relief of nasal allergic symptoms is observed within 15 minutes after administration.¹

Dymista^{*} Nasal Spray relieves the symptoms of allergies including runny nose, post-nasal drip, sneezing and itchy or blocked nose.²

When compared to a combination of oral loratadine and intranasal fluticasone propionate, Dymista^{*} Nasal Spray showed a more rapid onset of action and relief of bothersome rhinitis symptoms such as nasal congestion, itchy nose and itchy eyes.³

Precautions

Dymista^{*} Nasal Spray is contraindicated in patients hypersensitive to azelastine hydrochloride, fluticasone propionate, or any of its excipients.^{1,2}

Special care should be considered (as the risk of side effects is increased):²

- In patients who have had a recent operation on their nose
- In patients with a nasal infection
- · In patients with tuberculosis or an untreated infection
- In patients with vision changes or a history of increased ocular pressure, glaucoma and/or cataracts
- · In patients with impaired adrenal function
- · In patients with severe liver disease

Dymista^{*} Nasal Spray contains benzalkonium chloride, which may cause irritation or swelling of the nasal mucosa and bronchospasm, especially if used for a long time.¹

Pregnancy and lactation

There are no adequate and well-controlled clinical trials of Dymista^{*} Nasal Spray or its individual components in pregnant women.

It is not known whether Dymista^{*} Nasal Spray is excreted in human breast milk. Caution should be exercised when Dymista^{*} Nasal Spray is administered to breastfeeding women.¹

Major adverse effects

Epistaxis (nosebleeds) is a very common adverse effect of Dymista^{*} Nasal Spray. Other common side effects include headache, dysgeusia (unpleasant taste) and unpleasant smell. Dysgeusia may be experienced after administration (often due to incorrect method of application, namely tilting the head too far backwards during administration).¹

Drug interactions

Some medicines may increase the effects of Dymista^{*} Nasal Spray and may need careful monitoring if used concurrently. These include medicines for HIV infection (e.g. ritonavir, cobicistat) and medicines for the treatment of fungal infections (e.g. ketoconazole).²

Care should be taken when administering azelastine hydrochloride in patients taking concurrent sedative or central nervous system medications because sedative effects may be enhanced. The concurrent use of alcohol may also enhance this effect.¹

Patient information

Instructions for use:1

- Preparing the spray:
 - The bottle should be shaken gently before use for about five seconds by tilting it upwards and downwards and the protective cap be removed afterwards
 - Prior to first use, Dymista* Nasal Spray must be primed by pressing down and releasing the pump six times

- If Dymista* Nasal Spray has not been used for more than seven days, it must be reprimed once by pressing down and releasing the pump
- Using the spray:
 - After blowing the nose the suspension is to be sprayed once into each nostril keeping the head tilted downward
 - After use the spray tip is to be wiped and the protective cap to be replaced

Conclusion

Dymista^{*} Nasal Spray is a dual-action treatment for allergic rhinitis in patients aged six years and older, relieving symptoms such as runny nose, post-nasal drip, sneezing, and itchy or blocked nose when either an intranasal antihistamine or corticosteroid alone is insufficient.^{1,2}

The product should always be applied according to the instructions of the doctor or manufacturer. For full prescribing information, refer to the package insert approved by the South African Health Product Regulatory Authority (SAHPRA).

- 1. Dymista® Nasal Spray professional information, 31 October 2023.
- 2. Dymista® Nasal Spray patient information leaflet, 31 October 2023.
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