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Unheard at the Counter: Pharmacy Assistants' Cassandra Moment

Natalie Schellack

In Greek mythology, Cassandra was blessed with the gift of prophecy but cursed never to be believed. It is a powerful metaphor for pharmacy in 2026. We have warned about medicine stockouts, rushed and unsafe workflows, inappropriate antibiotic use, and underinvestment in the teams that keep the dispensary running. We speak up in dispensaries, wards, WhatsApp groups, and staff meetings. Yet the people who see the problems first, basic and postbasic assistants, are often the ones heard last.

Prophecy one: the support workforce under strain

The first prophecy concerns **you**, the pharmacy support workforce. South Africa already has too few pharmacists for its population. In this gap, pharmacy assistants carry a huge share of the daily workload: managing queues, preparing and labelling medicines, checking expiry dates, and helping patients make sense of their treatment.

But training and posts for assistants are not always planned or funded in a coordinated way. In some places, assistant posts are left vacant or replaced with untrained staff. In others, there are willing candidates but too few accredited training sites or tutors. Many basic assistants struggle to find opportunities to progress to postbasic level, even when they have the experience and motivation.

When we ignore these problems, we pretend that the system will somehow cope. In reality, today's neglected support workforce is tomorrow's crisis at the dispensary window. If there is no trained assistant at the counter, patients wait longer, counselling is rushed or skipped, and safety checks are more likely to be missed. The whole team's workload becomes heavier and more stressful.

Prophecy two: AMR and the everyday antibiotic conversation

Nowhere is the "Cassandra moment" more visible than in antimicrobial resistance (AMR). Pharmacists, doctors and microbiologists often speak about AMR in conferences and policy meetings. But pharmacy assistants deal with it in a much more immediate way: at the counter, with a real person on the other side.

It is usually an assistant who hears the familiar requests: "I just need something strong for my throat", "Can't you please give me antibiotics without a prescription?", "I stopped my tablets when I felt better." You see patterns long before they appear in any report, the overuse of certain antibiotics, patients who do not complete courses, and people who think antibiotics work for every cough or cold.

When you take time to explain why antibiotics are not always appropriate, why the full course matters, or when the patient must see a nurse or doctor, you are doing quiet antimicrobial stewardship every day. Yet this role is rarely named in policies or guidelines. When AMR plans are written, pharmacy assistants are often missing from the table, even though you are central to changing behaviour in real life.

Ignoring your experience here is dangerous. Assistants can tell us which messages confuse patients, which instructions they do not understand, and where access problems drive risky behaviour. If we do not listen, AMR plans will remain good intentions on paper, not living practice at the counter.

Prophecy three: technology, AI and job security

The third prophecy concerns innovation. Across South Africa, pharmacies are moving from handwritten labels to computer systems, from paper stock cards to barcoding, and in some settings even to automated dispensing and robotics. Artificial intelligence (AI) is starting to appear in conversations about interaction checking, stock prediction and adherence support.

Used wisely, technology can make your work safer and more manageable. It can reduce repetitive tasks, cut down transcription errors, and help track expiry dates and stock levels. It can free up more time for counselling and patient support. But used badly, it can become another source of stress: systems that are slow or unreliable, extra data capture steps that are not practical, and decisions made far away from the dispensary by people who have never stood in a payday queue.

There is also a real fear that automation or AI could be used as an excuse to freeze or cut posts for assistants, to say "the computer can

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do it". Here, too, pharmacy assistants are offering early warnings. You know which parts of the process can safely be automated and which still need a human eye and human empathy. You know how older patients, people with low literacy, and those with multiple chronic conditions actually experience our systems.

If we introduce technology without listening to assistants, we risk creating beautiful systems on paper that do not work in reality.

From unheard helper to essential partner

If pharmacy support personnel are to escape Cassandra's fate, two things must change: how you speak, and how others respond.

First, you must keep speaking and where possible, record what you see. Keep simple notes of recurring problems: times when stockouts force you to turn patients away, common questions that show misunderstanding, large queues at certain times of the month, or repeated system failures. Share these patterns calmly and consistently with your supervising pharmacist, your manager, and your professional bodies. Stories are powerful, but stories plus simple data are even harder to ignore.

Second, pharmacists, managers and policymakers must actively involve pharmacy assistants in planning and problemsolving. When workforce plans are drawn up, when training programmes are designed, when new software is bought, when AMR campaigns are planned, the question should be: "Have we asked our assistants what they see and what they need?" Your perspective is not a luxury; it is essential to safe, efficient practice.

Cassandra's tragedy is that she was condemned to be right and ignored. Pharmacy assistants do not have to accept the same ending. Every time a pharmacist treats you as a full member of the team, every time a manager invites your input on workflow or patient education, every time a planner recognises the need for structured training and progression for assistants, we rewrite a small part of the story.

You are not "just" an extra pair of hands. You are eyes and ears at the counter, guardians of medicine safety, and a vital link between patients and the health system. The more we listen to what you see and know, the stronger South African pharmacy, and our patients, will be.



Winter in the pharmacy

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Abstract

Viral infections of the upper respiratory tract, such as the common cold and influenza are the most common syndromes of infection in humans. For most people, symptoms are self-limited. However, these ailments are frequent reasons for which patients seek counselling from healthcare providers, particularly in community pharmacies. While many over-the-counter (OTC) cold and flu remedies have not been shown to be clinically effective, they do appear to lessen the immune response to the infecting virus, and there is little doubt that appropriate symptomatic treatment can make the patient feel better. Choice of therapy depends on which symptoms predominate.

Introduction

The common cold and influenza (flu) are common respiratory infections in humans, with adults having two to five colds each year and school children having from seven to 10 colds per year.¹ Influenza is relatively uncommon compared with the large number of common colds that occur.² Many patients will report having “flu” when it is far more likely that the person has a cold.

While the common cold and flu share many symptoms, they are caused by different viruses.³ Flu is caused by influenza viruses only, whereas the common cold can be caused by more than 200 different viruses.^{3,4}

Rhinoviruses, which include more than 100 serotypes, are the most common viruses associated with cold symptoms and cause 30 to 50% of colds.⁴ Coronaviruses may cause 10 to 15% of colds, although this percentage may be higher since the arrival of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its evolution into variants that generally cause less severe disease.⁴

Symptoms of colds and flu

It is not possible to determine which virus caused the cold or flu based on symptoms alone, because all likely viral pathogens may cause similar symptoms.⁴ In general:

- Flu symptoms begin abruptly and are more intense.³ People with flu are more likely to have a fever, sweats and chills, headaches and muscle aches and pains, be bedbound and unable to go about their usual daily activities.^{2,3,4}
- Cold symptoms have a more gradual onset and symptoms are usually milder.² People with colds are more likely to have a runny or blocked nose than people who have flu.³

Symptoms of the common cold are largely due to the response of the immune system to the infection, rather than to direct viral damage to the respiratory tract.⁴ Symptoms vary from person to person, but runny nose and nasal congestion are the most common symptoms.⁴ Other common symptoms include sore throat, cough and malaise (a general feeling of discomfort or illness).⁴ Colds generally do not lead to serious complications such as pneumonia.³

The intensity and type of symptoms of the common cold may also be related to the age of the patient, underlying illnesses and the infecting virus.⁴ Most of the viruses that cause colds are capable of reinfection after re-exposure, but subsequent infections with the same or similar viruses are usually milder and of shorter duration.⁴

Influenza should be suspected in patients with abrupt onset of fever, cough, and muscle pain during the influenza season (usually between May and September in South Africa).^{5,6,7} Other common symptoms include malaise, sore throat, headache, nausea, and nasal congestion.⁶

In most people, influenza is an uncomplicated illness that resolves after three to seven days.⁷ However, because of the damage caused to the airways by the influenza virus, influenza can be complicated by secondary lung infections such as pneumonia, particularly in high-risk patients such as children under five years of age and older people (65 years of age and older).^{2,3,7}

- High-risk patients with symptoms of influenza and patients with severe or persistent symptoms, fever that improves and

then returns, severe or productive cough, chest pain, difficult or painful breathing and shortness of breath should be referred to the doctor immediately.^{2,6,7}

Managing the symptoms of colds and flu

Although symptoms of the common cold and influenza are usually self-limited and resolve without treatment, the use of OTC medicines in the treatment of cold and flu symptoms is widespread.² There is little doubt that appropriate management of the symptoms of the common cold or flu can make the patient feel better and it is therefore important to select treatment based on the patient's symptoms, and taking into account the patient's preferences.²

Nasal symptoms

Topical saline applied to the nasal cavity may help remove bothersome nasal secretions.⁸ In infants and young children, topical saline may be applied using saline nose drops while a saline nasal spray or saline nasal irrigation may be suitable in older children and adults.⁸

Topical decongestants such as xylometazoline (e.g. Otrivin®) or oxymetazoline (e.g. Iliadin®) may be used short-term (no longer than three to five days) to relieve nasal congestion associated with the common cold.⁹

Oral decongestants such as phenylpropanolamine and pseudoephedrine are no longer available OTC as single-ingredient preparations in South Africa but are available in combination with an analgesic or an antihistamine or in combination with an analgesic and an antihistamine. While antihistamines alone are of minimal benefit in patients with the common cold, the combination of an antihistamine and a decongestant appears to be more beneficial than either component alone.⁹

While combination cold and flu medicines may be considered in children 12 years of age and over and in adults with moderate to severe symptoms, they should be avoided in children under two years of age.^{10,11} For children over two years of age, these medicines may only be prescribed by a doctor or a pharmacist.¹⁰

Table I: Comparing the symptoms of colds and flu^{5,6}

Symptom	Common cold	Influenza
Fever	Rare	Usual; sudden onset and may last 2–5 days
Headache	Rare	Common
Muscle aches and pains	Slight	Usual, often severe
Fatigue, weakness	Sometimes	Usual, can last up to 2–3 weeks
Blocked or runny nose*	Common	Sometimes
Sneezing	Usual	Sometimes
Sore throat	Common	Sometimes
Cough	Common	Common
Extreme exhaustion	Never	Usual, at the beginning of the illness

*Nasal discharge in patients with the common cold may be clear or thick, white, yellow or green.⁴ Many patients place importance on the colour of the nasal discharge, but coloured nasal discharge is a normal self-limited phase of the common cold and does not mean that the patient has a bacterial infection or that the patient needs an antibiotic.⁴

Fever, headache and malaise

Paracetamol and nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen may be used for the treatment of fever, headache, malaise, muscle and joint pains.⁹ Short courses of standard doses are generally effective and well-tolerated in children and adults.^{9,11} Aspirin is included in some combination cold and flu medicines but should be avoided in children under 16 years of age.^{12,13}

Sore throat

Paracetamol and NSAIDs such as ibuprofen have been shown to relieve sore throat associated with colds and flu.¹⁴ Several topical therapies are also available to treat a sore throat and are supplied in the form of throat sprays, oral rinses or gargles, and lozenges.¹⁴ The advantages of local therapies for sore throat include direct application to the site of pain and the reduced risk of side-effects.¹⁴

Several products used to treat sore throat are combination products that contain an antiseptic such as chlorhexidine and a local anaesthetic such as benzocaine, or an analgesic.¹⁴

Table II: Symptom-based treatment of colds and flu

Please check the manufacturer's professional information for indications, contraindications and dosage instructions. If using a combination of medicines, ensure that products selected do not contain the same or similar ingredients to avoid doubling up on the doses of these medicines.

Nasal symptoms	Fever, headache, malaise	Sore throat
Topical saline e.g. Sinutab® Nasal Saline spray (Preservative Free)	Paracetamol e.g. Panado®	Antiseptic/anaesthetic sprays or gargles e.g. benzocaine/chlorhexidine (Orochlor® Spray Solution)
Topical decongestants* e.g. oxymetazoline (Iliadin®) e.g. xylometazoline (Sinutab® Nasal Spray)	NSAIDs such as ibuprofen e.g. Nurofen®	Throat lozenges [§] e.g. flurbiprofen (Strepsils® Intensive)
Oral decongestant in combination with an antihistamine [‡] e.g. pseudoephedrine/triprolidine (Actifed® Cold) e.g. pseudoephedrine/chlorphenamine (Sinutab® Sinus Pain)	Aspirin (in children >16 years)	Other e.g. Benylin® Cough Lozenges
Analgesic/decongestant combination* e.g. ibuprofen/pseudoephedrine (Advil® Cold & Sinus Tablets, Sinutab® 3-Way Tablets), Benylin® Daytime Flu Tablets e.g. paracetamol/pseudoephedrine (Sinutab® Sinus Pain Non-Drowsy)		
Analgesic/decongestant/antihistamine combination e.g. paracetamol/pseudoephedrine/diphenhydramine (Benylin® four Flu liquid, Benylin® four Flu tablets)		

*Use under the doctor or pharmacist's supervision in children under 12 years of age.¹¹ Do not use for longer than three to five days. [‡]Do not use in children under two years of age. Use under the doctor or pharmacist's supervision in children over two years of age. [§]May be used by adults and children over 12 years of age.



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Three active ingredients in one formulation

Analgesic/antipyretic - Paracetamol:

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Decongestant - Pseudoephedrine hydrochloride:

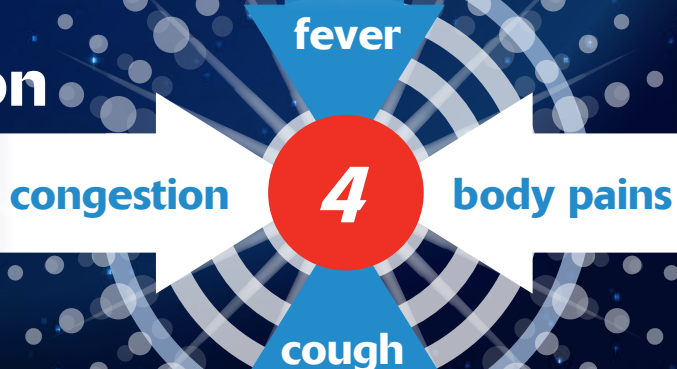
BENYLIN® FOUR FLU LIQUID: 45 mg per 20 mL & BENYLIN® FOUR FLU TABLETS: 22,5 mg per tablet.

Antihistamine - Diphenhydramine hydrochloride:

BENYLIN® FOUR FLU LIQUID: 25 mg per 20 mL & BENYLIN® FOUR FLU TABLETS: 12,5 mg per tablet.



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For the relief of symptoms associated with colds and flu including:^{1,2}

- ✓ coughing
- ✓ nasal congestion
- ✓ headache
- ✓ fever
- ✓ minor aches and pains



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For the full list of excipients with known effects refer to the Professional Information approved by the medicines regulatory authority.^{1,2}



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[S2] Benylin® Four Flu Liquid. Each 20 mL contains Diphenhydramine Hydrochloride 25 mg, Paracetamol 1000 mg & Pseudoephedrine Hydrochloride 45 mg. Reg. No. 33/5.8/0345. For full prescribing information, refer to the Professional Information approved by the medicines regulatory authority. [S2] Benylin® Four Flu Tablets. Each tablet contains Diphenhydramine Hydrochloride 12,5 mg, Paracetamol 500 mg & Pseudoephedrine Hydrochloride 22,5 mg. Reg. No. 33/5.8/0509. For full prescribing information, refer to the Professional Information approved by the medicines regulatory authority.

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Cough

There is no good evidence for or against the effectiveness of OTC medicines for acute cough.^{2,9} While the clinical effectiveness of cough remedies is debatable, many people who visit the pharmacy for advice do so because they want some relief from their symptoms, and cough remedies can have a useful placebo effect.² Nonetheless, cough and cold medicines containing antihistamines, decongestants, dextromethorphan, or guaifenesin should not be used in children under two years of age and may only be prescribed by a doctor or pharmacist for children over two years of age.¹⁰ Cough remedies containing extracts of thyme and/or ivy may be used in adults and children for acute cough relief.^{15,16}

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Synbiotic support during and after antibiotics: Why probiotics plus prebiotics – and delivery – matter

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Abstract

The gut microbiome is integral to gastrointestinal and systemic health. Antibiotic therapy is a major driver of gut dysbiosis, characterised by loss of microbial diversity, depletion of beneficial bacteria and expansion of opportunistic and antimicrobial-resistant pathogens. Probiotics reduce antibiotic-associated diarrhoea and support microbiome recovery, while prebiotics selectively support beneficial bacterial growth. When combined as a synbiotic, probiotics and prebiotics provide complementary and synergistic support for gut recovery during and after antibiotic therapy. This article discusses the rationale for synbiotic use, strain-specific probiotic evidence, immune effects, and the importance of targeted delivery for clinical efficacy.

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Introduction

The human gastrointestinal tract harbours a complex microbial ecosystem containing approximately 40 trillion bacterial cells across more than 1 000 species.¹⁻³ This microbiome contributes to digestion, immune regulation, epithelial integrity and metabolic homeostasis.^{2,4}

Disruption of this ecosystem is associated with gastrointestinal disorders such as inflammatory bowel disease and irritable bowel syndrome, as well as systemic conditions including obesity, type 2 diabetes, atopy and neurodegenerative disease.^{2,4,5}

Antibiotic exposure can disrupt the microbial balance of the gut microbiome, reducing microbial diversity, facilitating pathogen overgrowth and the emergence of antibiotic-resistant microbes.^{4,6} Supporting microbiome recovery during and after antibiotic therapy through synbiotic supplementation (combining probiotics with prebiotics) may help to restore the microbial balance disrupted by antibiotics.^{6,7}

Insights into dysbiosis

A stable gut microbiome is sustained by dominant gut phyla such as Firmicutes and Bacteroidetes, which play a critical role in immune modulation, short-chain fatty acid (SCFA) production and maintenance of the intestinal barrier.⁷ Many gut microbial species have the potential to cause disease.⁸ For example, species from the Enterobacteriaceae family, such as *Escherichia coli* are opportunistic pathogens with the potential to cause severe infections.⁸

Dysbiosis is characterised by loss of beneficial microbes, reduced microbial diversity and overgrowth of potential pathogens.⁷ Dysbiosis may be the result of multifactorial disturbances of gut homeostasis, including antibiotic exposure.⁷

Broad-spectrum agents including aminopenicillins ($\pm$ clavulanate), cephalosporins, clindamycin and fluoroquinolones often drive dysbiosis.^{4,6,7} This disruption in the gut microbiome favours overgrowth of opportunistic species, increases the risk of antibiotic-associated diarrhoea (AAD) and *Clostridioides difficile* infection and is associated with longer-term metabolic and inflammatory sequelae.^{3,6,7}

Recovery of the gut microbiome is influenced by antibiotic spectrum, dose and duration of treatment and may take weeks to months in some cases.^{4,6,7} During this recovery phase, synbiotic interventions may support restoration of the gut microbiome balance disrupted by antibiotic therapy.^{6,7}

Probiotics, prebiotics and synbiotics: the concepts

Probiotics

Probiotics are live microorganisms that, when administered in adequate amounts, confer a health benefit on the host.³ Their effects include pathogen interaction, enhancement of epithelial barrier function, immune modulation and production of beneficial metabolites such as SCFAs.^{3,7}

Prebiotics

Prebiotics are selectively fermented, non-digestible substrates that stimulate the growth or activity of beneficial gut bacteria, leading to improved host health.³ Common examples include fructooligosaccharides (FOS), inulin and galactooligosaccharides (GOS).³

Synbiotics

Synbiotics comprise live microorganisms and substrates, i.e., probiotics and prebiotics to provide complementary or synergistic effects to the probiotic organism.^{3,9} The principal purpose of a synbiotic combination is the improvement of the survival of probiotic microorganisms in the gastrointestinal tract.⁹

The role of probiotics in the management of gut dysbiosis

Clinical evidence supports probiotic use alongside antibiotics to reduce gastrointestinal side-effects such as diarrhoea.⁶

- Witsell et al. demonstrated that *Lactobacillus acidophilus* administered with amoxicillin/clavulanate significantly reduced gastrointestinal complaints and yeast superinfections compared with antibiotic therapy alone.¹⁰
- Forssten et al. showed that *L. acidophilus* administered as a multistrain formulation during antibiotic treatment can persist in the gut and contribute to microbiome recovery following antibiotic treatment cessation.¹¹
- Meta-analyses confirm that probiotics, including *L. acidophilus*, *L. rhamnosus*, *L. casei*, *Bifidobacterium* spp. and *Saccharomyces boulardii*, reduce the risk of antibiotic-associated diarrhoea across age groups, with higher doses associated with greater efficacy.^{3,6}

Immune modulatory mechanisms of probiotic bacteria

Probiotics mediate the modulation of both innate and adaptive immune responses in the intestine by stimulating:¹²

- Production of various cytokines and chemokines from dendritic cells, lymphocytes, macrophages, mast cells, granulocytes, and intestinal epithelial cells
- Immunoglobulin A (IgA)-producing cells and consequent IgA secretion

Probiotics can therefore improve the host immune system and induce important beneficial effects, allowing prevention and/or management of immune/inflammatory-related diseases, including diarrhoea.¹²

Probiotic survival: why delivery matters

Probiotic efficacy depends on strain selection, dose, viability and delivery.¹³ Probiotic organisms are sensitive to heat, oxygen, moisture and gastric acidity, with poor storage or formulation leading to substantial colony-forming units (CFU) losses before intestinal delivery.^{13,14}

Encapsulation technologies aim to protect probiotics during storage and gastrointestinal transit.¹⁴ DUOCAP™ capsule-in-capsule technology enables staged release, with the outer capsule dissolving in the stomach and the inner, acid-resistant capsule releasing the probiotic in the intestine.^{15,16}

A word on Probitec

Probitec® is a synbiotic formulation delivering 15 billion CFUs of *Lactobacillus acidophilus* La-14 per capsule, combined with fructooligosaccharides (FOS) as a prebiotic substrate to support the resident beneficial microbes in the gut.^{3,16}

Formulated using DUOCAP™ technology, Probitec® protects probiotic viability, ensures targeted intestinal release and supports microbial recovery during and after antibiotic therapy.¹⁶ The product maintains labelled CFU potency over its shelf life and can be taken with or without food, including alongside antibiotics.¹⁶

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Managing that winter cough

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Abstract

An acute cough is a common symptom associated with colds and influenza. When assessing patients presenting with a cough in the pharmacy, it is important to identify if the cough is acute or chronic and whether there are any red flag symptoms that require referral to the doctor. Over-the-counter (OTC) medicines for coughs and colds should be avoided in children under the age of two years. Older children and adults may be treated with an OTC product, taking into consideration the nature of the cough and after referring to the manufacturer's prescribing information.

Introduction

Cough is normally a protective reflex that prevents the aspiration of food and fluid into the airways and helps remove mucus (phlegm) and foreign substances from the airways.¹ It is also a common symptom associated with colds and influenza (flu) and may persist for three weeks or more.¹

The first days of an upper respiratory tract infection (URTI) such as a cold or flu are often associated with a dry and unproductive cough that serves no useful purpose and may cause loss of sleep and exhaustion.¹ This cough may be voluntary (rather than reflex) and be related to a sensation of airway irritation.¹

Productive cough usually occurs later during the URTI and may be related to inflammation spreading to the lower airways and triggering mucus production.¹

Wet or dry – an outdated classification?

Traditionally, coughs have been described as being either 'wet' (productive, chesty and producing phlegm) or 'dry' (non-productive,

tickly, tight and not producing phlegm).^{2,3} This classification into 'wet' and 'dry' cough has been challenged and instead of asking patients whether their cough is 'wet' or 'dry', the important thing to identify is whether the cough is acute (has lasted less than three weeks) or chronic (has lasted more than eight weeks), together with an assessment of red flag symptoms, which require referral to the doctor.^{2,3} A cough that lasts longer than three weeks following a viral URTI is often called a 'post-viral' or post-infectious cough and may affect up to 25% of adults after a respiratory infection.⁴

Table 1: Red flag signs and symptoms accompanying cough that require referral to the doctor³

Cough that lasts more than three weeks
Coughing blood or blood present in phlegm
Unexplained cough that recurs on a regular basis
New or altered cough in a smoker or a patient with poor immunity
Chest pain, difficulty or painful breathing or shortness of breath
Stridor (high-pitched noise) or other respiratory noises
Distressing cough in frail, older people

Acute cough – is treatment required?

Acute cough associated with a cold or flu is usually self-limiting and will get better with or without treatment.³

The evidence to support the use of OTC medicines for acute cough is not strong, and because these medicines can have side-effects, cough and cold medicines that contain antihistamines, decongestants, expectorants or suppressants are contraindicated for use in children under the age of two years in South Africa and may only be used in children over the age of two years when prescribed by a doctor or pharmacist.⁵ Indeed, OTC medicines for common cold symptoms are best avoided in most children under six years of age.⁶

- Warm fluids and honey (only in children over one year) given straight or diluted in liquid are options for treating acute cough in young children.⁶

While their effectiveness remains debatable, cough remedies for an acute cough can have a useful placebo effect in older children and adults and many patients report finding them helpful.⁷

- A cough suppressant such as dextromethorphan may be useful for acute cough if sleep is disturbed.⁷ Cough suppressants, however, may cause retention of phlegm, which may be harmful in patients with bronchitis.⁷
- Guafenesin and ammonium chloride are thought to exert an expectorant effect by loosening phlegm.²
- Herbal cough remedies containing extract of ivy or a thyme-ivy combination have shown benefits vs. placebo for the treatment of acute cough in adults and in children.^{8,9}

While single-ingredient preparations for acute cough are preferred, some patients may prefer to use combination products.³ Pharmacists and pharmacist's assistants should refer to the manufacturer's prescribing information and use their professional judgment to guide patients in the selection of the most appropriate products.³

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Sore throat

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Abstract

Pharyngitis and tonsillitis are common causes of sore throat and are most often viral in origin. Although symptoms may overlap, bacterial infections such as group A streptococcal throat infection require accurate diagnosis and appropriate antibiotic treatment to prevent complications. Most cases of sore throat are self-limiting and can be managed symptomatically with analgesics, medicated lozenges, gargles, sprays and non-pharmaceutical measures. Pharmacists and assistants play an important role in advising patients on suitable over-the-counter (OTC) options, safe product use, antimicrobial stewardship, and identifying symptoms that require medical referral.

Introduction

Pharyngitis may be defined as an infection or irritation leading to inflammation of the pharynx or the tonsils.^{1,2} If the pharynx (or back of the throat) is affected, it is known generally as pharyngitis, whereas inflammation of the tonsils is referred to as tonsillitis.²

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.³

The tonsils consist of two oval-shaped mounds of tissue and form part of the immune system's first line of defence against viruses and bacteria entering the mouth.⁴ 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 tonsils typically shrink (referred to as involution) and become less important after puberty.^{4,5}

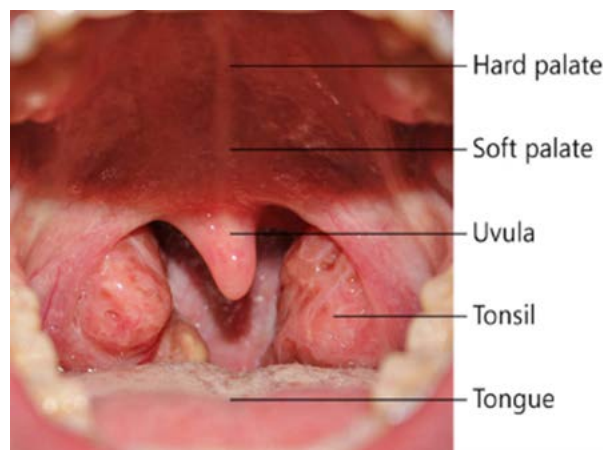


Figure 1: Anatomy of mouth and throat.
Source: Klem/Wikimedia commons/CC BY 3.0.

Causes of pharyngitis and tonsillitis

Usually, the cause of pharyngitis or tonsillitis is viral in origin.¹ Very often these viruses are the same viruses that cause the common cold and influenza (flu).^{2,3} Some infections may be bacterial in origin and are mostly caused by group A streptococcal bacteria (GAS), and such an infection is sometimes referred to as "Strep" throat.^{1,6} Other causes of sore throats include fungi or parasites, allergy or postnasal drip, gastro-oesophageal reflux disease (GORD), as well as irritants such as cigarette smoke.^{1,2,5}

Babies, young children and school-aged children are considered to be most at risk for tonsillitis, as most viral infections are spread through close contact.⁴ Adults working in close environments may be at risk of contracting pharyngitis.⁵ Most cases of pharyngitis and tonsillitis occur during the winter months, when people are more likely to be in close contact indoors.²

Diagnosis

Distinguishing between a viral or bacterial sore throat is difficult based on symptoms and physical examination alone.¹ Viral sore

throat is often accompanied by other virus-related symptoms, such as congestion, runny nose (rhinorrhoea), sneezing and coughing.⁶ The viral sore throat typically occurs after several days of coughing or rhinorrhoea.¹

Sore throat due to GAS is most often seen in children between four and seven years of age, and generally has a sudden onset, with a low-grade or mild fever, and no cold symptoms.^{1,6} Cough is not commonly associated with GAS, while headache and vomiting are.¹ Bacterial infection of the tonsils may also present with swollen glands in the neck, pus-filled spots on the tonsils, and bad breath.⁵

Symptoms

The main symptom of either pharyngitis or tonsillitis is a sore throat.²

Other symptoms may include:^{2,5,7}

- Fever (low-grade or high-grade)
- Coughing
- Painful swallowing
- Headache
- Loss of appetite
- Nausea
- Fatigue
- Changes in or loss of voice
- Muscle pain
- Earache

Management

Most cases of pharyngitis or tonsillitis will resolve on their own within 1–2 weeks.^{3,6} Antibiotics should not be used for viral infections.⁷ Not only are they not effective in treating viruses, but they also increase the risk of antimicrobial resistance (AMR).⁷

Antibiotic therapy is only recommended for bacterial throat infections, and should only be initiated if the infection is laboratory-confirmed as bacterial in origin from a throat swab (antimicrobial stewardship).⁷ The concern with bacterial infections of the throat is that they can lead to complications, such as rheumatic fever, rheumatic heart disease (which can damage the heart valves) and kidney disease, if left untreated.^{1,2}

Symptomatic relief

Self-care with OTC medications, such as oral and topical analgesics and medicated lozenges are cornerstones in the management of sore throat.⁹

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

Systemic (oral) preparations

Oral analgesics may provide relief from pain (e.g. paracetamol and ibuprofen) and inflammation (e.g. ibuprofen). Children and adolescents should not be given aspirin due to the risk of Reye's syndrome.⁵ Studies have shown that there is no extra benefit in using OTC analgesics that also contain codeine or caffeine.⁹

Topical preparations

Topical throat preparations, which include oral rinses (gargles), sprays and lozenges, help relieve throat pain. Lozenges and pastilles stimulate saliva production which helps to soothe the throat.^{4,6,7,8}

- 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 these.⁸ (See Table I: Topical sore throat formulations and ingredients.)

- **Benzydamine and flurbiprofen** are examples of topical analgesics with anti-inflammatory properties 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.
- **Ectoïne®** is a natural compound that is added to some lozenges to reduce inflammation and protects irritated mucosa. As the

Table I: Topical sore throat formulations and ingredients⁸

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

lozenge dissolves, it stimulates saliva production, which helps lubricate the throat. A study has shown that Ectoine® is 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:^{4,6,7,9}

- Increased fluid intake assists in keeping the throat moist and prevents dehydration where there is a fever.
- Home-made gargles with warm salt water (2.5 ml salt in one cup water) may ease pain and soothe the throat 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 lollies, 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:^{2,4,5,9}

- Difficulty swallowing (dysphagia)
- Sore throat lasting seven days or longer
- Croakiness or hoarseness of the voice lasting longer than three weeks
- High-pitched sound during breathing (stridor)
- 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 viruses and may be managed symptomatically. Most sore throats are self-limiting, and up to 90% of patients will feel better within a week of onset of symptoms.⁹ There are several medications available OTC to provide symptomatic relief from a sore throat.² 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.^{4,7} Pharmacists and assistants should be aware of the symptoms requiring referral to a doctor for medical evaluation.⁹

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Pain and fever in children: pharmacological and non-pharmacological management strategies for community pharmacy practice

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Abstract

Pain and fever in children are among the most common reasons parents and caregivers visit community pharmacies in South Africa. Paracetamol and ibuprofen are the main recommended over-the-counter options for mild to moderate pain and fever in children. Aspirin should be avoided in children under the age of sixteen due to the risk of Reye's syndrome associated with viral infections. Correct weight-based dosing, appropriate product selection, proper instructions for measuring and administering, and recognition of when to refer are all central to safe management and use. Certain groups of children in special populations, including infants under three months of age, those with liver disease, kidney disease, asthma, bleeding disorders, or chronic illnesses all require additional caution due to the risk of complications. This article provides practical guidance for pharmacist's assistants on safe and effective pain and fever management in children.

Introduction

Pain and fever in children are among the most common reasons for parents and caregivers seeking help at community pharmacies across South Africa. Both tend to provoke anxiety despite them being a normal part of childhood illness. However, understanding what they are, and why they occur, has the power to transform a

source of fear into something that can be managed with confidence. The pharmacist's assistant is most commonly the first healthcare provider a caregiver will turn to and plays an important role in providing practical advice, recommending appropriate medicines, and identifying when a child needs to see a doctor.¹ Importantly, fever and pain reflect protective responses of the body that require evaluation followed by appropriate therapeutic interventions.² Fever is a sign that the body's immune system is working.³ In a similar way, pain alerts that something requires attention in the body. Effective management aims to prevent potential complications while improving clinical outcomes by supporting these natural responses.²

Understanding fever

Fever is one of the most important symptoms of childhood infections as it is a physiological response to a pathological condition.^{3,4} The increase in body temperature is seen as a beneficial and vital event within the body.³ A fever is defined as when the body temperature exceeds 38 °C.⁵ The increase in body temperature during a fever arises from a shift in the set point within the hypothalamus.³ This shift is caused by the release of pyrogens when an individual is exposed to an infectious agent.⁶ The increased set point means that the hypothalamus perceives the current body temperature as too low, thus coordinating a series of events like shivering and reduced blood flow to the skin to generate and retain heat.⁷ This is in order to raise the body temperature, ultimately resulting in a fever.⁴ Fever helps fight infections as it slows the growth and replication of bacteria and viruses, and increases immune cell production to stimulate an immune response.⁸ Fever has preventative functions but also poses some physiological hazards such as febrile seizures, dehydration and hyperthermia.⁶ Therefore, treatment goals should aim to manage the fever ensuring safety and comfort but not entirely inhibiting the fever from performing its protective functioning.⁸

Understanding pain

Much like fever, pain is a protective mechanism of the body which warns of damage or danger.⁹ When tissue is injured or inflamed, the body will release chemicals known as prostaglandins which activate specialised nerve endings known as nociceptors.³ These nerve

endings send signals through the nervous system to the brain where pain is perceived through central sensitisation.³ Both paracetamol and ibuprofen work on the production of prostaglandins, and thus both medications are used to treat pain and fever.¹⁰ Pain in children differs significantly from adults due to their distinct physiological and psychological characteristics.¹¹ Pain management in children is also more complex because pain assessment and communication is difficult for children, which then often leads to inappropriate treatment.¹¹ Caregivers should look for behavioural signs and a proper history should be taken by the pharmacist's assistants to help them decide whether to recommend a medicine or refer a child to a doctor.¹

Teething pain

Teething is a normal developmental stage that usually begins around six months of age, with primary teeth erupting between 6 and 30 months.¹² As a tooth moves through the gum tissue, it causes local inflammation and discomfort. Common symptoms include drooling, swollen gums, irritability, gum rubbing, biting on objects, disturbed sleep, and reduced appetite.¹² A common misconception is that teething causes significant fever. While it may cause a very mild temperature rise, it generally will not be above 38.5 °C.¹³ A higher fever during the teething period should not automatically be attributed to teething alone as it is likely due to a concurrent infection.¹³ Non-pharmacological approaches for teething relief include a chilled, not frozen, teething ring to soothe inflamed gums and relieve pressure.¹⁴ Temporary relief from discomfort can also be provided by rubbing the gum with a clean finger.¹⁵ For moderate discomfort, a weight-appropriate dose of ibuprofen is preferred over paracetamol from 12 months, given its anti-inflammatory mechanism on the gum tissue. Topical teething gels are also available over-the-counter (OTC), however, should be used with caution as directed due to potential side-effects.

Non-pharmacological measures

Non-pharmacological measures should be offered alongside medications and sometimes are sufficient on their own for mild fever symptom relief.¹ Approaches for fever may include dressing the child in light, comfortable clothing and keeping them in a well-ventilated room. Maintaining hydration is also important, as fever may result in increased fluid loss through sweating and breathing.¹⁵ If a child is not drinking, they should be referred appropriately.¹ Tepid sponging with lukewarm water may offer temporary relief but should not serve as a substitute to antipyretics in a distressed child.¹ For localised pain, a cold compress can be applied to the area briefly to help reduce swelling and discomfort. Children experiencing pain or fever are often in distress, thus comfort, a calm environment, and distraction through play are simple yet effective tools that can be used alongside pharmacological treatments.¹

Pharmacological management

Paracetamol and ibuprofen are the first-line treatments available OTC for the management of pain and fever in children.¹ Both are effective, child-friendly options for mild to moderate pain and fever relief, with ibuprofen also providing anti-inflammatory effects.¹⁶ Dosing should always be based on the child's weight rather than age. Despite their common availability, inappropriate use or incorrect dosing may result in serious adverse effects (Table I).

Paracetamol

Paracetamol is one of the most widely used antipyretic and analgesic medications in paediatric practice. It works mainly in the central nervous system by reducing pain perception and lowering the hypothalamic temperature set point.¹⁷ The recommended dose for children is 15 mg/kg per dose every 4–6 hours, with a maximum of four doses in 24 hours (Table II).^{1,17,18} It is generally well tolerated but overdose remains a major concern.¹⁶ Excessive doses may result in severe hepatotoxicity and acute liver failure.¹⁷ Many cold and flu preparations also contain paracetamol and as such caregivers should always carefully check active ingredients prior to dosing.

Ibuprofen

Ibuprofen is another commonly used medicine for pain and fever management in children, and it belongs to the nonsteroidal anti-inflammatory drug (NSAID) class.^{16,17} It works by inhibiting the enzyme responsible for prostaglandin production.¹⁶ This provides the antipyretic, analgesic and anti-inflammatory effects needed to reduce fever, pain and inflammation respectively.¹⁶ This makes it useful in cases of inflammation such as teething, sore throat and musculoskeletal injuries. The recommended dose for children is 10 mg/kg per dose every 6–8 hours, with a maximum of three to four doses in 24 hours.¹⁷ Ibuprofen causes gastric irritation and therefore it should always be administered with food or milk to reduce this irritation.¹⁶ It should also be used cautiously in children who are dehydrated or vomiting.¹⁶

Fixed-dose combination products

Fixed-dose combination products containing both paracetamol and ibuprofen are available for select cases of moderate to persistent pain in children aged 2 to 12 years when monotherapy is insufficient.¹⁹ Combinations appear to provide synergistic analgesic effects, with improved efficacy, faster onset, and longer duration of action without significant adverse events when used correctly. Caregivers should be clearly advised as to when such combinations should be used and to not administer additional paracetamol- or ibuprofen-containing products simultaneously.

Aspirin

Aspirin should not be used in children younger than 16 years of age unless specifically prescribed by a doctor.¹⁸ It is associated with Reye's syndrome, a rare but potentially fatal condition affecting the liver and brain.¹⁸ The risk is particularly associated with viral infections such as influenza and chickenpox. Caregivers should be advised to avoid aspirin-containing products in children unless specifically prescribed for certain conditions.

Important: Always check the concentration of the product being used before calculating doses. Weight-based dosing is preferred over age-based dosing wherever possible, as age alone may lead to underdosing or overdosing.

Special populations

The majority of children experiencing pain and fever can be managed safely at home with supportive care and appropriate administration of medicines such as paracetamol or ibuprofen. However, certain children require additional caution due to underlying medical conditions that may increase the risk of adverse effects or complications. Pharmacist's assistants are integral in identifying these high-risk children, providing safe counselling, and

Table I: Comparison of common medicines used for pain and fever in children

Medicine	Usual paediatric dose	Common side-effects	Important cautions
Paracetamol	15 mg/kg every 4–6 hours	Nausea, rash, liver toxicity in overdose	Hepatic impairment, overdose risk, concomitant use with other paracetamol-containing medicines, neuromuscular disease
Ibuprofen	10 mg/kg every 6–8 hours	Stomach irritation, abdominal pain, kidney injury, bronchospasm in NSAID-sensitive asthma	Asthma, dehydration, concomitant use of drugs that increase risk of bleeding, previous peptic ulceration, coagulation defects, renal impairment
Aspirin	Not routinely recommended in children	Nausea, gastric irritation, bleeding	Risk of Reye syndrome
Fixed-dose combinations of paracetamol and ibuprofen	Not routinely used	Increased risk of dosing errors	Careful counselling is essential

All doses should be weight adjusted

Table II: General dosing guide for paracetamol and ibuprofen

Child's weight	Approximate age	Paracetamol dose	Paracetamol syrup (120 mg/5 mL)	Ibuprofen dose	Ibuprofen syrup (100 mg/5 mL)
5 kg	2–3 months	75 mg	3 mL	50 mg	2.5 mL
7.5 kg	6 months	112.5 mg	5 mL	75 mg	3.75 mL
10 kg	1 year	150 mg	6.25 mL	100 mg	5 mL
15 kg	3 years	225 mg	9.5 mL	150 mg	7.5 mL
20 kg	5 years	300 mg	12.5 mL	200 mg	10 mL
25 kg	7 years	375 mg	15.5 mL	250 mg	12.5 mL
30 kg	9 years	450 mg	19 mL	300 mg	15 mL

Paracetamol: 15 mg/kg per dose, max 4 doses in 24 hours. Ibuprofen: 10 mg/kg per dose, max 3–4 doses in 24 hours. Ibuprofen is not indicated under 12 months. Always confirm the product concentration before calculating the dose.

recognising when referral to a healthcare professional is warranted (Table III).

Children with liver disease

Caution is necessary in children with liver disease, as paracetamol is metabolised in the liver. Excessive dosing may result in hepatotoxicity, particularly in children with chronic liver disease, malnutrition, dehydration, or prolonged fasting.^{3,20} Caregivers are advised to use weight-based dosing only and avoid exceeding the recommended daily dose. If a child requires treatment for longer than 48 to 72 hours, they should be referred to a doctor.

Children with kidney disease or dehydration

Ibuprofen and other NSAIDs should be administered with caution in children with kidney disease, dehydration, vomiting, diarrhoea, or inadequate oral intake. NSAIDs reduce prostaglandin production, potentially decreasing renal blood flow and exacerbating kidney dysfunction in susceptible children.^{3,10} Paracetamol is generally the preferred option due to its minimal impact on renal perfusion.³ Symptoms of dehydration such as reduced urine output, dry mouth, persistent vomiting or diarrhoea, excessive sleepiness or inability to tolerate fluids should prompt referral to a doctor.

Children with asthma

A minority of children with asthma may experience an exacerbation of wheezing following ibuprofen or other NSAID use. If caregivers report that NSAIDs have previously triggered wheezing or breathing difficulty, ibuprofen should be avoided and the child should be referred for medical assessment.^{3,21}

Children with bleeding disorders or gastric problems

Ibuprofen may elevate the risk of gastrointestinal irritation and bleeding due to its effects on platelet function and the gastric mucosa. Therefore, ibuprofen should be avoided in children with bleeding disorders, thrombocytopenia or a history of peptic ulcers. Paracetamol would be the preferred analgesic in such cases.³

Infants younger than three months

Any fever in an infant younger than three months is considered clinically significant and necessitates urgent medical evaluation. Fever in this age group may indicate serious bacterial infection, such as sepsis or meningitis. Pharmacist's assistants should not recommend OTC medicines without referral in these cases.^{1,18}

Malnourished children and children with chronic illness

Children with malnutrition, HIV infection, tuberculosis, epilepsy, congenital heart disease, or other chronic illnesses may require more intensive monitoring when receiving pain or fever medicines. Malnutrition can increase the risk of paracetamol toxicity due to reduced glutathione stores, which impair hepatic detoxification pathways.³ Children receiving chronic medications may also be at risk for drug interactions or organ dysfunction. Pharmacist's assistants should encourage caregivers to inform healthcare professionals about all medicines the child is taking, including traditional and OTC products.

Practical counselling: a case study

Case

A mother visits the pharmacy with her 4-year-old son, who weighs 16 kg. He has had a fever and ear pain since the previous night. The child is still drinking fluids but is less active than usual. The

Table III: Summary of special population considerations

Condition	Preferred medicine	Key consideration
Liver disease	Paracetamol (with caution)	Reduce dose; avoid high-frequency use, monitor for toxicity signs
Kidney disease/dehydration	Paracetamol	Avoid ibuprofen; ensure adequate hydration
Asthma (NSAID sensitive)	Paracetamol	Avoid ibuprofen if previous reaction to NSAIDs
Bleeding disorders	Paracetamol	Avoid ibuprofen and aspirin
Malnutrition/chronic illness	Paracetamol (with caution)	Reduced glutathione stores increase toxicity risk; refer to doctor
Infants under 3 months	Refer immediately	Do not recommend OTC treatment; urgent medical review required.

All decisions regarding dose adjustment in chronic disease should involve the treating doctor.

mother says she has already given a “flu mixture” at home and wants additional medicine because the fever keeps returning.

Counselling approach

The pharmacist's assistant should first assess for danger signs requiring referral, including difficulty breathing, convulsions, severe lethargy, persistent vomiting, inability to drink fluids, rash and severe pain lasting more than two days. In this scenario, the child appears clinically stable and may be managed symptomatically, with instructions to seek medical review if symptoms worsen or persist.

The assistant should:

1. Determine whether the flu mixture already contains paracetamol to prevent accidental overdose.
2. Explain correct weight-based dosing.
3. Encourage adequate fluid intake.
4. Advise caregivers to avoid excessive wrapping or cold baths, as these interventions may increase discomfort.
5. Explain that the primary goal of treatment is to enhance the child's comfort rather than to normalise body temperature completely.^{1,18}

South African and international guidelines discourage routine tepid sponging or unnecessary alternation of medicines, as these practices may confuse caregivers and increase the risk of dosing errors.^{1,18,22}

For a 16 kg child, paracetamol may be given at 15 mg/kg every 4–6 hours if needed, without exceeding the maximum daily dose. Additionally, ibuprofen may be considered if the child is well hydrated and has no kidney disease, asthma sensitivity, or gastric problems.^{3,20} The caregiver should be advised to seek medical care if the fever persists beyond 48 hours, ear pain worsens, the child becomes drowsy, oral intake decreases, or new symptoms develop. This approach to practical counselling enhances medicine safety, reduces dosing errors, and promotes rational medicine use at the community pharmacy level.

Conclusion

Paracetamol and ibuprofen remain the cornerstones of OTC pain and fever management in children. Paracetamol is suitable from birth and is the only option for infants under 12 months. Ibuprofen is effective for conditions with an inflammatory component and is registered for use from 12 months. Aspirin must be avoided in children under 16 years. Correct weight-based dosing and awareness of duplicate dosing from combination products are essential counselling points. Children with underlying medical conditions require additional care. The pharmacist's assistant who applies these principles confidently and knows when to refer makes a meaningful contribution to the health of children and the peace of mind of their caregivers.

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The role of **topical solutions:** over-the-counter **analgesics** and **local anaesthetics** in pain relief

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Abstract

Topical analgesics and local anaesthetics are important over-the-counter (OTC) options for the management of common pain and minor skin discomfort. This article reviews the role of topical products in providing targeted relief for conditions such as muscle strains, sprains, arthritis, bruising, sore throat, insect bites, and superficial skin irritation. It outlines the main categories including counterirritants, topical nonsteroidal anti-inflammatory drugs (NSAIDs), and local anaesthetics such as lidocaine, benzocaine, and amethocaine. The article explains their mechanisms of action, highlights their benefits compared with oral analgesics, and emphasises their value in reducing systemic side-effects while supporting self-care. Practical guidance is provided on appropriate product selection, counselling points, safe use, and referral criteria. By understanding the differences between these products and their indications, healthcare providers can better support patients in achieving effective pain relief.

Over-the-counter analgesics and local anaesthetics

Patients presenting in the pharmacy often request quick and practical relief from common aches and pains, such as muscle strains, sports injuries, or the persistent discomfort of osteoarthritis. OTC topical analgesics provide targeted relief directly at the site of pain through gels, creams, rubs, and sprays. These products have gained popularity because they offer effective pain management with a lower risk of systemic side-effects compared to oral medications.¹

How topical analgesics work

Topical analgesics deliver active ingredients through the skin to underlying tissues, acting locally rather than systemically. The skin serves as a selective barrier, allowing therapeutic concentrations at the pain site while limiting overall absorption into the bloodstream, often to less than 10% of oral doses.^{2,3} This localised action minimises risks like gastrointestinal irritation, kidney strain, or cardiovascular risks associated with oral nonsteroidal anti-inflammatories.^{1,4}

By concentrating the analgesic effect at the site of pain, topical solutions allow individuals to effectively manage localised mild to moderate pain while reducing the exposure of the body to the medication.

Main types of OTC topical analgesics available

Several categories of topical analgesics are readily accessible on pharmacy shelves.

Counterirritants

Products containing menthol, camphor, or methyl salicylate produce a warming or cooling sensation that distracts nerve endings and promotes local blood flow. This counterirritation helps ease muscle tension and stiffness. Some deliver soothing warmth suitable for backache, joint stiffness, or minor sprains, while others offer penetrating heat from essential oils for sports aches or daily wear-and-tear. Cooling options use menthol for mild numbing of recent injuries.^{2,5}

Topical NSAIDs

Nonsteroidal anti-inflammatory drugs (NSAIDs) in topical form, inhibit cyclo-oxygenase enzymes locally. This reduces prostaglandin production responsible for inflammation and pain, providing benefits for tendon strains, ligament sprains, bruises, or osteoarthritis flares. Systemic absorption remains low with fewer gastrointestinal or cardiovascular risks than oral NSAIDs. Application involves a thin layer two to four times daily, gently massaged until absorbed. These often quick-drying, non-greasy gels suit active users. Transdermal

NSAID patches offer a convenient alternative, delivering sustained release of the active ingredient over several hours with once- or twice-daily application, making them particularly suitable for consistent pain management throughout daily activities.^{1,6,7,8}

Herbal and combination formulations

Arnica-based gels appeal to those seeking natural-origin options for bruising and swelling. Some products blend counterirritants with mild analgesics for enhanced relief. Patches, aerosol sprays and roll-ons provide convenient, mess-free application for areas like the lower back or shoulders.^{2,9}

The advantages in patient care

Topical analgesics offer clear benefits beyond convenience. They suit individuals who cannot tolerate oral NSAIDs due to ulcers, reflux, or the use of blood-thinning medications. Older adults or those with multiple conditions may also experience fewer drug interactions with topical analgesics. Rapid onset, often within 15–30 minutes, helps athletes and manual workers remain active.² Evidence shows that topical diclofenac provides pain reduction in knee osteoarthritis comparable to oral dose forms but with significantly lower systemic exposure and fewer adverse events.^{10,11}

In self-medication contexts, these products support informed choices while encouraging limits on use. They complement lifestyle advice, such as rest, ice, compression, and elevation for acute injuries.¹

When assisting customers, consider asking about the pain's nature, duration, location, and any existing conditions or medications. This helps match the product, warming rubs for chronic stiffness or cooling gels for acute swelling, and flag when referral is needed.¹²

Understanding local anaesthetics

Local anaesthetics add another dimension to topical pain control. While analgesics ease the sensation of pain, local anaesthetics

temporarily block nerve signals altogether, producing numbness.^{3,13} OTC options in South Africa include creams and gels with lidocaine, benzocaine or amethocaine (tetracaine). Amethocaine cream, for example, provides short-term surface anaesthesia for minor skin irritations, sunburn or small cuts.¹⁴ Benzocaine appears in throat sprays and lozenges for sore-throat relief, calming inflamed tissues quickly.¹³ Lidocaine-based gels serve similar purposes for haemorrhoids, minor wounds or cosmetic procedures, with effects starting in minutes and lasting up to an hour or more depending on formulation and occlusion.¹⁵

The distinction matters when advising on use. Topical NSAIDs and counterirritants target inflammatory or muscular pain over hours or days. Local anaesthetics excel for brief numbing, before a minor procedure, for insect bites or superficial burns. Some overlap exists: certain numbing creams ease discomfort from minor skin trauma while analgesics address deeper joint or muscle issues. Both remain suitable only for intact skin unless product labelling states otherwise.³

Effective use – practical guidance

- Clean and dry the area before application.
- Use the smallest effective amount (typically a 2–4 cm strip of gel) and massage gently until absorbed.
- Wash hands thoroughly afterwards to prevent eye or mouth contact.
- For local anaesthetics, allow 20–30 minutes for full effect; cling film may enhance absorption where indicated.

Recommend limiting use to seven days.

Key precautions include checking for allergies (especially to aspirin or NSAIDs). Pregnant or breastfeeding women and parents of young children may need professional input. Age-appropriate formulations and supervision apply for children. Store products away from heat and out of children's reach. Mild skin irritation may occur; discontinue if rash or burning develops and suggest alternatives.

Table of topical analgesics and local anaesthetics

Product	Formulation	Active ingredient
Topical NSAIDs		
Voltaren® Emulgel	Gel	Diclofenac sodium
Panamor® Gel	Gel	Diclofenac sodium
Fastum® Gel	Gel	Ketoprofen
Deep Relief®	Gel	Ibuprofen
Norflex® Gel	Gel	Benzydamine HCl
TransAct® Patches	Patch	Fluriprofen
Counterirritants		
Deep Heat®	Gel, Patch, spray,	Menthol, eucalyptus, methyl salicylate
Arthraway®	Gel	Menthol, methyl salicylate, methylsulphonylmethane
Hot & Icy®	Gel, spray	Menthol, methyl salicylate, methylsulphonylmethane
Deep Freeze®	Gel, patch, Spray	Levomenthol
Go-Pain Arnica Gel®	Gel	Arnica, menthol, camphor, carbopol
Arnica Ice®	Gel, spray, massage oil	Arnica oil, menthol, camphor
Local Anaesthetic		
EMLA®	Cream, Patch	Lidocaine and Prilocaine
Adco-Amethocaine®	Cream	Amethocaine

Emphasise reading labels carefully, as formulations vary in strength and indications.^{1,3,13}

Conclusion

For everyday aches, sports injuries, arthritis flares, or minor skin concerns, OTC topical analgesics and local anaesthetics provide practical, science-supported options.

By understanding mechanisms, selecting appropriate products, and offering clear application guidance, pharmacy teams help customers achieve better outcomes safely. Encourage questions about symptoms and history to tailor recommendations. When pain signals deeper problems, prompt timely referral.

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Managing minor bacterial skin infections in the pharmacy

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Abstract

This article outlines the causes, risk factors, presentation, prevention and treatment of some minor bacterial skin infections. Infections usually occur when bacteria enter the body through breaks in the skin, with *Staphylococcus aureus* and *Streptococcus pyogenes* being common causes. Skin infections such as minor folliculitis, furuncles and impetigo may be managed with topical antibiotics or antiseptics, while worsening, widespread or pus-filled skin infections require medical referral.

Introduction

The skin is the body's largest organ¹ and provides a remarkably good barrier against bacterial infections.² Although many bacteria come in contact with or reside on the skin, they are normally unable to establish an infection.² Bacterial skin infections develop when bacteria enter through breaks in the skin such as from scrapes, punctures, burns, animal or insect bites or wounds following surgery or because of skin disorders such as eczema.² Infections can be caused by bacteria, viruses or fungi but this article will discuss bacterial skin infections.¹

Bacterial skin infections

Bacterial skin infections are most commonly caused by *Staphylococcus aureus* and *Streptococcus pyogenes*.¹ Some infections involve only the skin while others may also involve the soft tissue below the skin.² Some of the relatively minor bacterial infections include:²

- Folliculitis
- Small skin abscesses (furuncles and carbuncles)
- Impetigo and ecthyma (skin infection characterised by crusted sores beneath which ulcers form.)³

As the skin becomes more deeply infected, the skin becomes red, warm, firm and tender as more severe infections develop, such as:⁴

- Cellulitis
- Erysipelas (superficial form of cellulitis)³
- Large skin abscesses
- Necrotising skin infections
- Wound infections

Some skin infections are mild and can be treated with topical antibiotics, but more severe infections require an oral antibiotic or other medical treatment.⁵

Risk factors

Children younger than five years of age and adults older than 65 years of age are affected more than other age groups.³ Comorbid conditions such as diabetes, poor circulation, immunosuppression due to medication use (chemotherapy, biologicals, etc.) or medical conditions such as HIV,³ malnutrition, and skin folds due to obesity may also increase susceptibility to bacterial skin infections.^{1,2,3,5} Skin that is inflamed or damaged is more likely to become infected and people with pre-existing skin conditions such as eczema or acne are predisposed to bacterial skin infections.^{1,2}

Folliculitis

Folliculitis is a superficial infection of a hair follicle and looks like a tiny red or white pimple at the base of a hair. The infected follicle is itchy or slightly painful, but the patient is otherwise healthy. Folliculitis often occurs following shaving, excessive sweating or exposure to poorly chlorinated hot tubs and develops between six hours and five days following exposure.^{2,6} Areas subject to moisture and friction such as areas underneath a bathing suit or sports equipment are most affected. Folliculitis can be treated

with antibacterial cleansers or topical antibiotics. If large areas are affected, oral antibiotics may be required.²

Small skin abscesses (furuncles and carbuncles)

Furuncles are tender, small abscesses that involve a hair follicle and the surrounding tissue.² They look like a red raised bump on the skin that is focused on a hair follicle. If it ruptures, cloudy fluid or pus drains out.⁷ They commonly occur on the face, neck, breasts, thigh and buttocks.² Warm compresses applied throughout the day can help speed the rupturing of a furuncle which usually results in pain relief. Patients should clean the site and their hands with an antibacterial soap to prevent the spread to other areas on the body. If a furuncle remains large, unruptured or painful for more than two weeks, the patient should see a doctor to drain the furuncle.²

Carbuncles are clusters of furuncles that are connected to one another below the skin.

Impetigo and ecthyma

Impetigo usually affects children between the ages of two and five years but can also affect older children and adults.⁸ Areas most commonly affected include the face, arms and legs, where it causes red bumps on the skin that eventually form blisters.^{8,9} The blisters then burst open and scab over to form a distinctive yellow, gold or brown crust, often called a honey-coloured crust.^{2,8} Patients with a few affected spots that do not penetrate deep into the skin may be treated with an antibiotic cream such as mupirocin. Impetigo can spread to other parts of the body and from person to person through direct skin to skin contact.^{8,9} It is thus important that patients wash their hands often with soap and water and use alcohol hand rubs to prevent the spread of impetigo.⁸ Patients should try to cover the affected areas to prevent touching or scratching open sores. The infection can also spread through contact with infected clothes, bedding, towels, toys and sports equipment.⁹

Ecthyma is a type of impetigo characterised by small, shallow ulcers that have a punched-out appearance and sometimes contain pus. The ecthyma crust is thicker than that seen in impetigo and is brown-black in colour. The lesions are surrounded by swollen purplish or red areas.² Ecthyma is usually treated with oral antibiotics.

Prevention and treatment

To prevent bacterial skin infections, it is important to keep the skin undamaged and clean. Small cuts and scrapes should be washed with soap and water and covered to prevent infection.²

Treatment of mild bacterial skin infections includes topical administration of antibiotic creams or ointments.¹ Topical antiseptics are often used as an alternative for minor infections.³ Some products available OTC in South Africa for management and treatment of bacterial skin infections are listed in Table I.

Fusidic acid should be used judiciously for acute skin infections and not for prolonged periods.¹⁰ In some instances, it may be necessary to see a doctor to drain bacterial infections and assess the need for oral antibiotics.³

Table I: Antibiotics for topical use available OTC in South Africa^{10,11}

Active ingredient	Products available	Dosing
Fusidic acid	Fucidin® cream Fucidin® ointment	Apply 3–4 times daily.
Mupirocin	Bactroban® Banogon® Dermoban® Piban® Supiroban®	Apply 2–3 times daily

When to refer

Patients should see a doctor if they develop any pus-filled blisters, widespread swelling and inflammation, red streaks spreading out from the infected area or fever.¹ Any recurring or frequent infections and skin infections that do not improve or get progressively worse also warrant a visit to the doctor.¹

Conclusion

Bacterial infections can develop when bacteria enter the body through small breaks in the skin.² Bacterial skin infections such as minor folliculitis, furuncles and impetigo can be treated successfully with topical antibiotics. Fusidic acid should be used judiciously and not for long periods of time.¹⁰ Patients should wash their hands regularly to prevent the spread of the infection to other areas on the body and to other people.^{2,8} Infections with pus-filled blisters, widespread inflammation and those that do not improve with topical treatment warrant a visit to the doctor and may require drainage or oral antibiotics.¹ The pharmacist's assistant can play an important role in providing treatment advice and recommendations for when to see a doctor.

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Nutraceuticals and supplementation

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Abstract

Nutraceuticals are increasingly used in everyday healthcare. They are derived from food sources and include dietary and herbal supplements, bioactive compounds, functional and fortified foods, and prebiotics and probiotics. These products are commonly used to help prevent nutrient deficiencies, support immune and gut health, and promote general well-being. As awareness of the role of diet in health grows, so does interest in nutraceuticals. Their effectiveness and suitability depend on factors such as quality, formulation, and intended use. Awareness of both their potential benefits and limitations supports responsible use alongside a balanced diet and standard healthcare.

Introduction

"Let food be thy medicine and medicine be thy food." This principle, commonly linked to Hippocrates and dating back to as early as 460–370 BCE, shows that the role of diet in health was recognised even in ancient times.¹ Early medical practices used plants, herbs, and food compounds to help prevent and treat illness. In modern times, the way we eat is still widely recognised as a key factor in determining health.²

What are nutraceuticals?

The term "nutraceutical" is derived from the words "nutrition" and "pharmaceutical" and refers to food-derived products that influence health *beyond* basic nutrition.² Examples of nutraceuticals include dietary and herbal supplements, functional and fortified foods and pre- and probiotics.^{2,3} Many nutraceuticals contain bioactive compounds with antioxidant and anti-inflammatory effects. These properties are thought to support overall health and may help reduce the risk of chronic conditions such as cardiovascular

disease, diabetes, and inflammatory disorders.³ For this reason, the use of nutraceuticals has increased in recent years. Caution is recommended when using nutraceuticals due to differences in product quality, effectiveness, and safety, as well as the possibility of drug interactions.³

Dietary supplements

Dietary supplements include essential vitamins and minerals that support normal body function and health. Their main purpose is to prevent or correct nutritional deficiencies, but many also provide additional health benefits.³ Several micronutrients have antioxidant or anti-inflammatory properties, such as vitamins C, A, and E, which help protect cells from damage.³ B-vitamins play an important role in energy metabolism and nerve function, while calcium and vitamin D are commonly used to support bone health.³ In some scientific literature, dietary supplements are differentiated from nutraceuticals because they primarily provide essential nutrients rather than bioactive compounds with therapeutic effects; however, in practice, the terms are often used interchangeably.³ As with all supplements, considerations such as appropriate dosing, product quality, overuse, and potential interactions with medicines are important when advising patients.

Herbal supplements

Herbal supplements are plant-derived products obtained from whole plants or from extracts and concentrates prepared from different plant parts. They have been used for thousands of years as both food and medicine.⁴ Herbs such as garlic, onion, ginger, and turmeric are widely recognised for their therapeutic value.⁴ Many herbal supplements contain ingredients that provide antioxidant, anti-inflammatory, antibacterial, and antiviral effects, which may support immune function and overall health.⁴ Examples include aloe vera, which is associated with wound-healing properties, echinacea, commonly used to alleviate cold and flu symptoms, and ginkgo, which has been used to treat circulatory conditions such as post-thrombotic syndrome.⁴ It is important to note that herbal supplements may vary in strength and quality, and some can interact with conventional medicines.⁴

Table I: Examples of nutraceutical products commonly available in the pharmacy

Health Focus	Example	Key Ingredients
Nutrient Deficiencies	Biogen Multivitamin Plus	Vitamins A, B1, B2, B3, B6, folic acid, B12, biotin, B5, vitamin C, vitamin D, vitamin E, potassium, calcium, copper, chromium, iron, magnesium, manganese, molybdenum, selenium, zinc, lutein, inositol, PABA, kelp (calcium and iodine), MSM (methylsulfonylmethane), spirulina powder, whey protein isolate.
	Centrum Adult Multivitamin	Vitamins A, B1, B2, B3, B6, folic acid, B12, biotin, pantothenic acid, vitamin C, vitamin D3, vitamin E, vitamin K1, calcium, chromium, copper, iodine, iron, magnesium, manganese, molybdenum, phosphorus, potassium, selenium, zinc; lutein.
Blood Support	Ferrous Forte	Iron, folic acid, vitamin B12, vitamin B6, vitamin C.
	Ferrous Somal capsules	Iron, folic acid, vitamin B12, vitamin C.
Bone Support	Solgar Calcium Magnesium with Vitamin D3	Calcium, magnesium, vitamin D3.
	Vital Calcium + Vitamin D	Calcium, vitamin D3.
Inflammation/ joint health	Biogen Joint Care	Glucosamine sulfate, chondroitin sulfate, methylsulfonylmethane (MSM), vitamin C.
	Solgar Glucosamine MSM Complex	Glucosamine sulfate, methylsulfonylmethane (MSM), chondroitin sulfate, vitamin C, ginger root extract.
Gut Health	Fybogel HiFibre	Ispaghula husk (psyllium fibre).
	Probi flora Intensive	<i>Lactobacillus acidophilus</i> , <i>Lactobacillus rhamnosus</i> , <i>Lactobacillus plantarum</i> , <i>Bifidobacterium lactis</i> , <i>Bifidobacterium longum</i> .
Immune Support	Linctagon Immune Support	<i>Pelargonium sidoides</i> (root extract), vitamin C, zinc.
	Wellvita Echinacea Immune Support	Echinacea purpurea extract, vitamin C, zinc, selenium, vitamin D3.
Cardiovascular Support	GlucaChol22	Oat bran powder (<i>Avena sativa</i>), providing oat betaglucan (soluble dietary fibre).
	Vital Omega-3	Fish oil (from <i>Clupeidae</i> , <i>Engraulidae</i> , <i>Scombridae</i> species), eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), vitamin E, vitamin D3.
Cognitive Health/Energy	Berocca Boost	Vitamin C, vitamin B1, vitamin B2, vitamin B3, vitamin B5, vitamin B6, biotin, vitamin B12, folic acid, calcium, magnesium, zinc, guarana seed extract (caffeine).
	Bioplus Vit-Ality B6 + B12 (capsules)	Vitamin B6, vitamin B12, folic acid, zinc.
Skin, Hair, and Nail Health	Solgar Skin, Nails & Hair Formula	MSM (methylsulfonylmethane), vitamin C, zinc, copper, silica (from red algae – <i>Lithothamnion calcareum</i>), amino acids (Llysine, Lproline.)
	Vital Hair, Skin & Nails	Hydrolysed collagen, biotin, vitamin C, vitamin E, vitamin B1, vitamin B2, vitamin B5, vitamin B12, folic acid, zinc, selenium, silicon, magnesium, calcium, amino acids (including Larginine, Lcysteine), MSM (methylsulfonylmethane).

Bioactive compounds

Bioactive compounds are naturally occurring chemical substances found in foods and plants. Unlike herbal supplements, which are derived from whole plants or plant extracts, bioactive compounds are usually isolated or concentrated active ingredients responsible for the therapeutic effects of many nutraceuticals.² Examples of bioactive compounds include resveratrol (found in grapes and berries), quercetin (from certain fruits and vegetables), curcumin (from turmeric), and piperine (from black pepper). These compounds have been widely studied for their antioxidant and anti-inflammatory properties, and some have also been associated with metabolic regulation and protective effects, including potential cardiovascular, immune, and neuroprotective benefits.²

Functional foods

Functional foods are foods that provide health benefits beyond basic nutrition and are consumed as part of the regular diet. Unlike conventional foods, which primarily supply energy and essential nutrients, functional foods contain components that support health or help reduce the risk of disease.⁵ Oats are an example of a functional food, as they contain beta-glucan fibre, which has been

shown to reduce cholesterol levels. Green tea is also considered functional due to its antioxidant properties.⁵

Fortified foods

Fortified foods differ from functional foods in that specific nutrients (e.g. vitamins and minerals) are intentionally added to foods to prevent or correct nutrient deficiencies within the population.⁵ A common example of fortification is the addition of iodine to salt to prevent iodine deficiency. Other foods, such as bread, maize, and plant-based milks, are also frequently fortified. Fortification is widely used as a public-health strategy to improve nutrient intake and reduce deficiency-related diseases.⁵ Unlike supplements, fortified foods are consumed as part of the normal diet and play an important role in improving population health.⁵

Pre- and probiotics

Probiotics are live beneficial microorganisms that support gastrointestinal health and contribute to immune function when consumed in adequate dosages. Common probiotic strains include *Lactobacillus* and *Bifidobacterium*, which are found in fermented foods such as yoghurt and in several oral dosage forms.⁶ Prebiotics

are non-digestible fibres that promote the growth and activity of beneficial gut bacteria and may be combined with probiotics to enhance their stability and effectiveness.⁶ Probiotic benefits are strain-specific and depend on correct selection, dosage, and proper use, highlighting the importance of appropriate counselling and professional guidance.⁶

Supplements

Discussed in Table I.

Safety of nutraceutical use

Although many nutraceuticals are available without a prescription, excessive intake and self-prescribing can increase the risk of side-effects, especially when products are taken for long periods or at high doses. Some nutraceuticals may interact with conventional medicines, which can affect treatment safety or effectiveness.² The quality and absorption of nutraceutical products can also vary between brands, meaning products may not always work as expected.² Pharmacist's assistants play an important role in promoting correct product use and referring patients for professional advice when necessary.²

Conclusion

Nutraceuticals offer valuable opportunities to support health across the lifespan, including improving nutrient intake, supporting immune and gut function, and complementing disease prevention

strategies. Products such as dietary supplements, herbal preparations, bioactive compounds, functional foods, fortified foods, and pre and probiotics are widely available and commonly used in everyday practice. While these products may provide important benefits, their effectiveness depends on appropriate selection, formulation, dosage, and use within the context of an individual's overall diet and health status. Pharmacist's assistants and other health professionals play an essential role in guiding appropriate product use, providing accurate information, and supporting patient understanding. When used responsibly and informed by evidence based guidance, nutraceuticals can serve as useful additions to balanced nutrition and standard medical care, rather than replacements for them.

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