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Have you seen the black swan?

Natalie Schellack

The writer Nassim Nicholas Taleb popularised the concept of “black swan” events in his book, *The Black Swan: The Impact Of The Highly Improbable*. The essence of Taleb’s work is the world is severely affected by events that are rare and difficult to predict, with consequences that could be positive or negative. Taleb provided the following definition before an event can be classified as a black swan event:

“First, it is an outlier, as it lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. Second, it carries an extreme ‘impact.’ Third, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable.”

In the pharmacy profession, we are faced with a current rise in black swan events, namely loadshedding, cholera- and measles outbreaks, the recent looting in KZN, and lastly, litigation from the Independent Practitioners Association’s Forums (IPAFs). The South African Pharmacy Council (SAPC) and the IPAF recently appeared in court (Tuesday, 23 May 2023) regarding an application to set aside Board Notice 101 of 2022. The matter pertains to the legislation the SAPC published in the Government Gazette in August 2021 to enable pharmacists to prescribe and dispense antiretroviral medicines/treatment (ART) for the treatment and prevention of HIV. The initiative, known as Pharmacist-Initiated Management of ART, or PIMART, aims to address the low rates of uptake of ART prophylactic treatment in South Africa and close the gap between the numbers of people diagnosed with HIV and those initiated onto treatment. The supplementary training for PIMART, guidelines and policies were developed between August 2018 and August 2021 (when legislation for PIMART’s implementation was published). These were developed by the SAPC in close collaboration with the South African HIV Clinician’s Society (SAHCS). Sadly, almost two years after the legislation was published, pharmacists remain unable to initiate ART in South Africa.

This despite the fact that the delayed diagnoses and treatment among youth are likely to lead to an increased risk of morbidity and increased onward transmission of the virus (horizontally and vertically). Less than two-thirds of people living with HIV were on

ARVs in the months following the policy to put all those diagnosed with HIV on treatment. In South Africa, over 175 000 people acquired HIV in 2021, yet, less than 1% of sexually active individuals in the country were using pre-exposure prophylaxis (PrEP) to protect themselves from HIV in 2022.

A response to these concerns was drafted as a letter to the Minister of Health in October 2021 by a group of stakeholders consisting of heads of pharmacy schools and departments, pharmacy researchers, practitioners, and academics. The letter was published as a correspondence article addressed to the Editor of the South African Medical Journal (SAMJ) in December 2021.¹ The correspondence highlighted international trends, existing precedents for pharmacist-initiated therapy in South Africa and the additional extensive training that pharmacists must undergo. Following the recent court appearance on 23 May 2023, judgment is now expected to be handed down within three months of the date of the hearing.

In the face of these events, now more than ever, there is a heightened need for the pharmacy profession to check their readiness for these emergency situations. In the face of these “black swan” events, we need to embrace the unexpected, and consider new opportunities. This could include harnessing the experiences of pharmacists and pharmacist assistants who led and participated in recent unexpected events, including how they pivoted to manage them.

As a profession, we will never be able to predict the unpredictable, but we can be more resilient and lean into these challenges with a new way of thinking and vigour.

Happy reading, onwards and upwards!

Warm wishes,

Natalie

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Cough up

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Introduction

Coughs are more prevalent in winter when viral infections are rampant. The colder air and changes in humidity levels lead to dry airways allowing viruses to adhere to the mucous membranes more easily. The reduced temperatures in winter also result in people spending more time indoors, possibly near others who may be sick.

Cold air may affect the immune response that should occur in the mucous membranes of the airways, allowing viruses and bacteria easier access to the respiratory system. Also, extreme cold causes vasoconstriction or narrowing of the blood vessels on the surface of the airways to try to minimise heat loss, but this can also lead to fluid leaking from the blood vessels: the start of a runny nose and postnasal drip. The lungs, similarly, tighten when cold air enters, which can trigger a spasm and coughing.

Coughing is a sudden expulsion of air from the lungs through the epiglottis (the flap of cartilage located in the throat behind the tongue) at a breakneck speed (± 160 km/hour). For a cough to occur, the following takes place:

- The vocal cords open widely as the patient inhales, allowing extra air to pass through into the lungs.
▼
- The epiglottis closes off the windpipe, and simultaneously, the abdominal and rib muscles contract, increasing the pressure behind the epiglottis.
▼
- With the increased pressure, the air is forcefully expelled, and creates a rushing sound as it moves very quickly past the vocal cords – this is the characteristic coughing noise.
▼
- The rushing air dislodges the irritant, making it possible to breathe comfortably again.

Coughing can often become a vicious cycle: we cough to clear an irritant, which causes further irritation to the throat and airways, increasing mucous production and thus provoking more coughing. A cough isn't usually concerning unless it lingers for more than three weeks (an acute cough) or additional symptoms such as difficulty breathing, weight loss or bloody phlegm are present. A persistent or chronic cough lasts more than eight weeks.

Symptoms commonly associated with a cough

- A runny or stuffy nose
- A postnasal drip
- Frequent throat clearing and sore throat
- Hoarseness
- Wheezing and shortness of breath
- Heartburn or a sour taste in the mouth
- Coughing up blood (rare)

Types of cough

The four main types of coughs are:

- Wet, productive or chesty cough: sounds wet because it brings up phlegm or mucus.
- Dry or non-productive cough: feels like a tickle in the back of the throat and does not produce any mucous or phlegm.
- Paroxysmal cough: violent and uncontrolled coughing that is exhausting and painful, can often result in vomiting and may be a symptom of whooping cough (Pertussis).
- Croup cough: sounds like a seal barking and is associated with laboured or noisy breathing.

Causes

The urge to clear the throat often results in a cough. When the airways become clogged with mucous or foreign particles such as smoke or dust, a cough serves as a reflexive reaction that helps clear the particles and makes breathing easier. This type of coughing is relatively infrequent but will increase with exposure to irritants such as smoke.

^{S1} Pholtex[®] Mucus 200

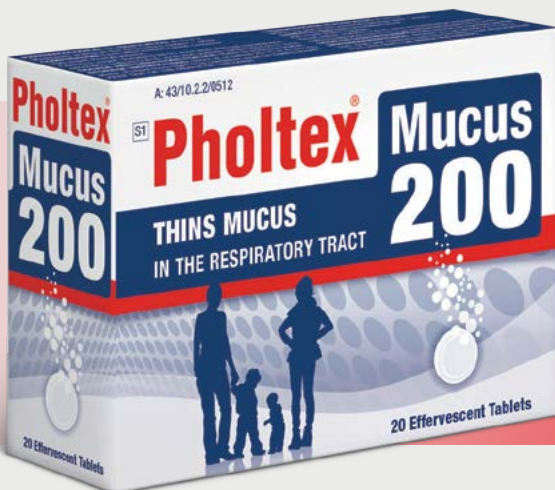
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Scheduling status: Proprietary name (and dosage form): Pholtex[®] Mucus 200. Composition: Each effervescent tablet contains 200mg N-Acetylcysteine. **Registration number:** 43/10.2.2/0512. **Name and business address of applicant:** Inova Pharmaceuticals (Pty) Ltd. **Co. Reg. No.** 1952/001640/07. 15e Riley Road, Bedfordview. Tel: 011 087 0000. www.inovapharma.co.za. For full prescribing information, refer to the professional information as approved by the SAHPRA (South African Health Products Regulatory Authority). Available at www.inovapharma.com. Further information is available on request from Inova Pharmaceuticals. 18368L. IN4832/23.

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Viral infections, such as a cold or influenza, are the most common cause of a cough. Cough is also associated with coronavirus disease 2019 (COVID-19). A chronic cough is also one of the typical symptoms of long-COVID-19.

Sinusitis with postnasal drip is often allergy-related and seasonal. Treatment with antihistamines and a steroid nasal spray is often indicated.

Smoking is a common cause of chronic coughing with a distinctive hacking sound.

Asthma is a common cause of coughing, particularly in young children. Asthmatic coughing typically involves wheezing.

Some medications may cause coughing, although it's generally a rare side effect. Angiotensin-converting enzyme (ACE) inhibitors, used to treat high blood pressure and heart conditions, can cause a dry cough.

Other causes: Ongoing coughs can be caused by damage to the vocal cords, acid reflux, chronic obstructive pulmonary disease (COPD), emphysema, tuberculosis, or a symptom of heart failure or pulmonary embolism. All patients presenting with coughs lasting longer than three weeks should be referred to a doctor.

Treatment

When assisting a patient presenting with a cough, consider asking the following questions:

- When did the cough begin?
- What does the cough sound like?
- Is there a pattern to it – more prevalent in the mornings or at night, before or after eating?
- What makes the cough better or worse?

There is no compelling evidence that cough medicines are effective in making coughs resolve faster, but these medicines can help alleviate the discomfort for the patient. They may contain various combinations of the following classes of drugs:

- **Cough suppressants or antitussives** – overpower the cough reflex
- **Expectorants** – help bring up mucous and other material from the trachea, bronchi, and lungs
- **Mucolytics** – thin and break down the mucous making it easier to expel from the airways
- **Bronchodilators** – relax the muscles around the airways

Other advice to offer your patients to treat their cough at home should include the following:

- Drink plenty of fluids. Many patients find warm drinks with honey and/or lemon can soothe a cough.
- Rest. Exercise can frequently irritate a cough and cause coughing fits. If the patient is suffering from a viral infection, it is important that they do not elevate their heart rate.
- Try to stay in a temperature- and humidity-controlled environment: extreme heat or cold, damp or dryness can irritate the airways.

Table 1: Examples of cough mixtures available in South Africa

Main active ingredients	Action	Common examples	Indications
Theophylline Diphenhydramine Ammonium chloride	Bronchodilator Antihistamine Expectorant	Solphyllex® Alcophyllex® Dilinct®	Productive cough with a tight chest
Diphenhydramine Ammonium chloride	Antihistamine Expectorant	Benylin® original	Productive cough
Bromhexine HCl Orciprenaline	Mucolytic Bronchodilator	Bronkese® Adco-linctopent®	Productive cough with a tight chest
Sorbimacrogol laurate Ammonium chloride	Expectorant	Expigen®	Productive cough with a tight chest
Carbocysteine	Mucolytic	Mucospect® Betaphlem®	Productive cough
Acetylcysteine	Mucolytic	Pholtex® Mucus 200 AMUCO® 200 Tussmuco® 200 Mucofizz® 200	Productive cough
Dextromethorphan	Cough suppressant	Benylin® dry Dilinct® dry	Non-productive "dry" cough
Dextromethorphan Ammonium chloride	Cough suppressant Expectorant	Broncol®	Dry cough with some phlegm
Thyme	Secretolytic Bronchospasmolytic	Q-Tuss®	Productive cough
Ivy leaf extract	Mucolytic Bronchodilator	Prospan® Hedelix®	Productive cough
Thyme Marshmallow root	Antitussive Mucolytic Expectorant	Bronchostop®	All coughs
Homoeopathic/herbal/ayurvedic	Claim to perform most or all actions required to treat any cough	Nectadyn® Kofcare® Chest-eeze®	All coughs

- Suck cough pastilles or lozenges to soothe the tickle in the throat.
- Saline nose drops or sprays can also help moisten the airways and flush away irritants.
- Steaming with a humidifier or over a bowl of hot water or nebulising with saline also helps ease congestion.
- Follow good hygiene habits, e.g. regular hand washing.
- Reduce or quit smoking.

When to refer

Refer immediately if a patient presents with

- Persistent cough for more than three weeks
- Fever, night sweats and/or headache
- Chest pain
- Coughing up blood or thick, discoloured phlegm
- Difficulty breathing, stridor (high-pitched noise when breathing in)
- Violent cough that begins rapidly
- Drowsiness and/or confusion
- Any infant younger than six months old

Conclusion

In summary, coughs can be annoying and uncomfortable but, for the most part, will clear up on their own. However, if a cough has

continued for some time or worsened, it is important to refer the patient to a doctor.

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Sore throat in the pharmacy

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Introduction

Acute pharyngitis, also known as a sore throat, is due to inflammation of the pharynx (back of the throat). This inflammation is mainly caused by a viral infection, with only one out of every 10 cases being bacterial in origin.

Distinguishing between a viral or bacterial cause of pharyngitis is difficult. In many instances of acute pharyngitis, the symptoms will resolve within a week without the need for antibiotic medication. However, if the aetiology is *Streptococcus pyogenes*, also called group A Streptococcus (group A strep), which causes acute pharyngitis known as strep throat, antibiotic therapy is necessary.

Many over-the-counter (OTC) products in the pharmacy offer symptomatic relief of a sore throat. Knowing when to refer a patient to a doctor is important, as some bacterial infections may result in complications, such as acute rheumatic fever, if not properly managed. Viral pharyngitis occurs more frequently during winter and early spring when people are more likely to gather indoors and the viruses can spread easily.

Causes and symptoms of viral pharyngitis

Several viruses can cause a sore throat or pharyngitis, namely rhinovirus, adenovirus, herpes simplex virus, influenza virus, parainfluenza virus, coronavirus and human immunodeficiency virus (to name but a few).

Pharyngitis is often the main symptom associated with the viruses that cause colds (coronaviruses) and flu (influenza viruses). The sore throat will therefore also be accompanied by other upper respiratory symptoms such as coughing, rhinorrhoea (runny nose), conjunctivitis and, in some instances, a rash.

Other viruses, such as Epstein–Barr virus (also known as infectious mononucleosis), can cause pharyngitis, headache, fever, swollen glands, myalgia (muscle weakness and pain), and fatigue.

Why should antibiotics not be prescribed for viral pharyngitis?

Antibiotics treat bacterial infections and will not be effective for a viral infection. Too often, antibiotics are incorrectly prescribed for viral pharyngitis. This is a concern for several reasons, one of them being that overprescribing antibiotics contributes to antibiotic resistance. Another concern is that the patient is unnecessarily exposed to the side effects of the antibiotic, such as diarrhoea or nausea and vomiting.

Causes and symptoms of bacterial pharyngitis

The most severe cases of pharyngitis tend to be bacterial in origin. Streptococcal (bacterial) infections are more likely to occur in children of school-going age.

Bacterial pharyngitis is most often caused by group A beta-haemolytic streptococci (GAS) bacteria and is also referred to as 'strep throat'. The sore throat, in this case, is often not associated with upper respiratory tract symptoms, such as cough or rhinorrhoea, but more typically, is associated with fever, pus from tonsils and swollen glands in the neck. Other symptoms may include abdominal pain, nausea, and vomiting.

Strep throat needs to be promptly treated with antibiotics. Untreated strep throat can lead to serious complications, such as rheumatic fever, which can damage the heart valves, and glomerulonephritis (kidney disorder).

Only about 10% of adults develop GAS and require antibiotics, yet many adults are unnecessarily prescribed antibiotics. This may be mainly due to the patient's belief that this will be the only way to relieve the sore throat's cause and pain.

Management of pharyngitis

Pharyngitis symptoms should only last a few days and steadily improve rather than worsen. The cornerstone of sore throat management includes using analgesics and topical anaesthetics.

Other general recommendations for symptomatic sore throat relief include:

- Drinking a sufficient volume of fluids (helps thin mucus to ease clearance)

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References:1. IMS Total Private Market Value MAT, February 2023. 2. Impact Rx, February 2023. 3. Wadesango L, Nxumalo N, Schellack N. An overview of throat lozenges and sprays in the management of pharyngitis at primary care level. S Afr Pharm J. 2019;86(2):17-20. 4. Steyer A, Marusi M, Kolenc M, Triglav T. A Throat Lozenge with Fixed Combination of Cetylpyridinium Chloride and Benzydamine Hydrochloride Has Direct Virucidal Effect on SARS-CoV-2. COVID. 2021;1:435-446. <https://doi.org/10.3390/covid1020037>.

Scheduling status: ⁵⁰ Proprietary name (and dosage form): ANDOLEX[®]-C LOZENGES ORANGE. Composition: Each lozenge contains: Benzydamine HCl 3.00 mg, Cetylpyridinium chloride 1.33 mg. Registration number: 36/16.4/0195. Scheduling status: ⁵⁰ Proprietary name (and dosage form): ANDOLEX[®]-C LOZENGES HONEY/LEMON. Composition: Each lozenge contains: Benzydamine HCl 3.00 mg, Cetylpyridinium chloride 1.33 mg. Registration number: 35/16.4/0320. Scheduling status: ⁵⁰ Proprietary name (and dosage form): ANDOLEX[®]-C LOZENGES STRAWBERRY. Composition: Each lozenge contains: Benzydamine HCl 3.00 mg, Cetylpyridinium chloride 1.33 mg. Registration number: 33/16.4/0374. Name and business address of applicant: Inova Pharmaceuticals (Pty) Limited. Co. Reg. No. 1952/001640/07, 15E Riley Road, Bedfordview. Tel. No. 011 087 0000. www.inovapharma.co.za. For more information, speak to your healthcare professional. 22220L. IN4947/23

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- Ensuring adequate rest
- Avoiding acidic foods
- Sipping cold or warm beverages
- Sucking on ice lollies or eating ice-cream
- Gargling with warm salt water— $\frac{1}{4}$ – $\frac{1}{2}$ a teaspoon of salt in a cup of water (children > 6 years and adults)
- Sucking hard sweets (not for children under 4 years due to choking hazard)
- Eating soft, non-acidic foods for those with difficulty swallowing
- Avoiding smoke

Oral analgesics, such as paracetamol, aspirin or ibuprofen, have been shown to rapidly relieve a sore throat and fever. Children under 12 should not be given aspirin, especially for a viral infection, due to its association with Reye's Syndrome (a rare but serious condition that causes confusion, swelling in the brain and liver damage).

OTC medicated throat lozenges, gargles and sprays are available to help relieve throat pain. These products may contain an anaesthetic, an antiseptic, an anti-inflammatory, or a combination thereof (Table I). Lozenges also stimulate saliva production which helps to lubricate and soothe the throat. Menthol is sometimes added to lozenges as a cooling agent. Herbal or homeopathic therapies are also available. However, many of these have not been evaluated for efficacy or safety. A lozenge with a natural ingredient, Ectoin[®], has been shown to be more effective in relieving a sore throat than gargling with salt water alone.

Table I: Ingredients found in various lozenges, gargles and throat sprays

Anti-inflammatory/analgesic	Benzydamine, flurbiprofen
Antiseptic	Cetylpyridinium, hexylresorcinol, chlorhexidine, 2,4-dichlorobenzyl alcohol, amylmetacresol, povidone-iodine, phenol
Local anaesthetic	Benzocaine, lidocaine, phenol, benzydamine, dibucaine

Children under 4 should not be given lozenges due to the risk of choking. Throat sprays containing benzocaine are contraindicated in children under 2 years of age. Although these combinations have been shown to provide symptomatic relief of a sore throat, they do not seem to have any greater benefit as compared to sucking hard-boiled sweets, and have a greater potential for adverse effects.

Table II describes the various formulations containing these ingredients and some examples of products available in South Africa.

Please refer to individual manufacturer's package inserts for prescribing details.

When to refer a patient with a sore throat to the doctor

- A sore throat lasting for 7 days or longer
- The sore throat is described as being "extremely painful," with no improvement within 24–48 hours and is not associated with a cough or cold symptoms
- Hoarseness of the voice lasting for longer than 3 weeks
- Difficulty in swallowing (dysphagia)
- Previous history of recurrent bouts of throat infection/tonsillitis
- Sore throat associated with a high fever (> 38 °C)
- Urgent referral to a medical facility is required for babies or children who have difficulty breathing, drooling and/or are unable to stay hydrated

Table II: Topical sore throat formulations and ingredients

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

Conclusion

Once a more serious condition has been excluded, patients should be reassured that most cases of acute pharyngitis are caused by a virus, and will clear on its own after several days. Antibiotics will not treat or improve the symptoms of a sore throat of a viral origin. There are various measures that can be taken to relieve sore throat symptoms, including taking analgesics, using lozenges, gargles, throat sprays, or simply gargling with salt water. Any sore throat that persists after seven days, or worsens, should be referred to a doctor for further evaluation.

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An overview of some over-the-counter products used for the treatment of acne

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Introduction

The skin condition acne presents in a wide spectrum of people, ranging from childhood to adulthood and sometimes during pregnancy. Acne has the potential to create disfiguring scars, which may lead to psychological distress when not managed properly.

When a patient asks for advice on managing acne, it is first important to determine the different kinds of skin types (Figure 1).

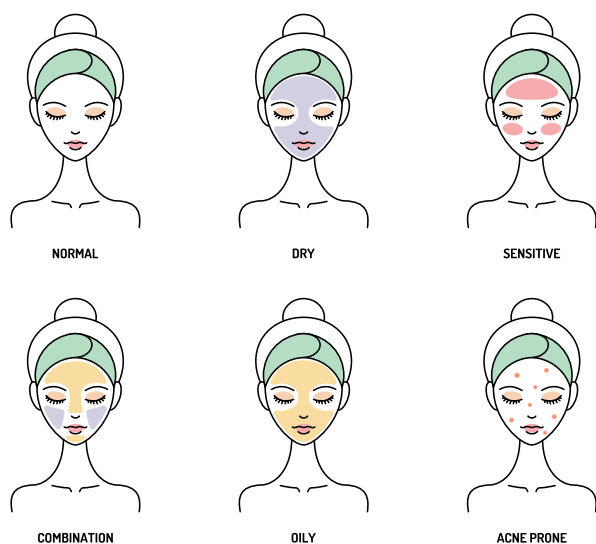


Figure 1: An illustration of the different types of skin

The pharmacist's assistant (PA) can then identify a patient who may most likely suffer from acne and then take the next step, which is suggesting an over-the-counter (OTC) product.

After identifying the type of skin most prone to result in acne (e.g., an oily skin type), it is important to identify the types of acne, explain to the patient what the possible (general) causes might be and what the different non-pharmacological treatment options are (Figure 2).

It is also essential to look at the patient holistically, taking into account the most probable causes of acne, types of acne present, and some examples of suggested pharmacological and non-pharmacological management options that may be considered for the management of acne (Figure 3).

Patients should be provided with the best options for managing their acne. Depending on the presentation of the acne – mild, moderate or severe – the options may include commencing with (an) OTC product(s) and then moving to scheduled medicine. This provides an ideal situation for a pharmacist and a PA to work in synergy.

Several OTC products are available on the market, including those with pharmaceutically active ingredients such as benzoyl peroxide and salicylic acid, as well as other products that contain natural products.

Table 1 summarises some of the OTC medicine available in the South African market, their indications, active pharmaceutical ingredients and natural products, and instructions for use.

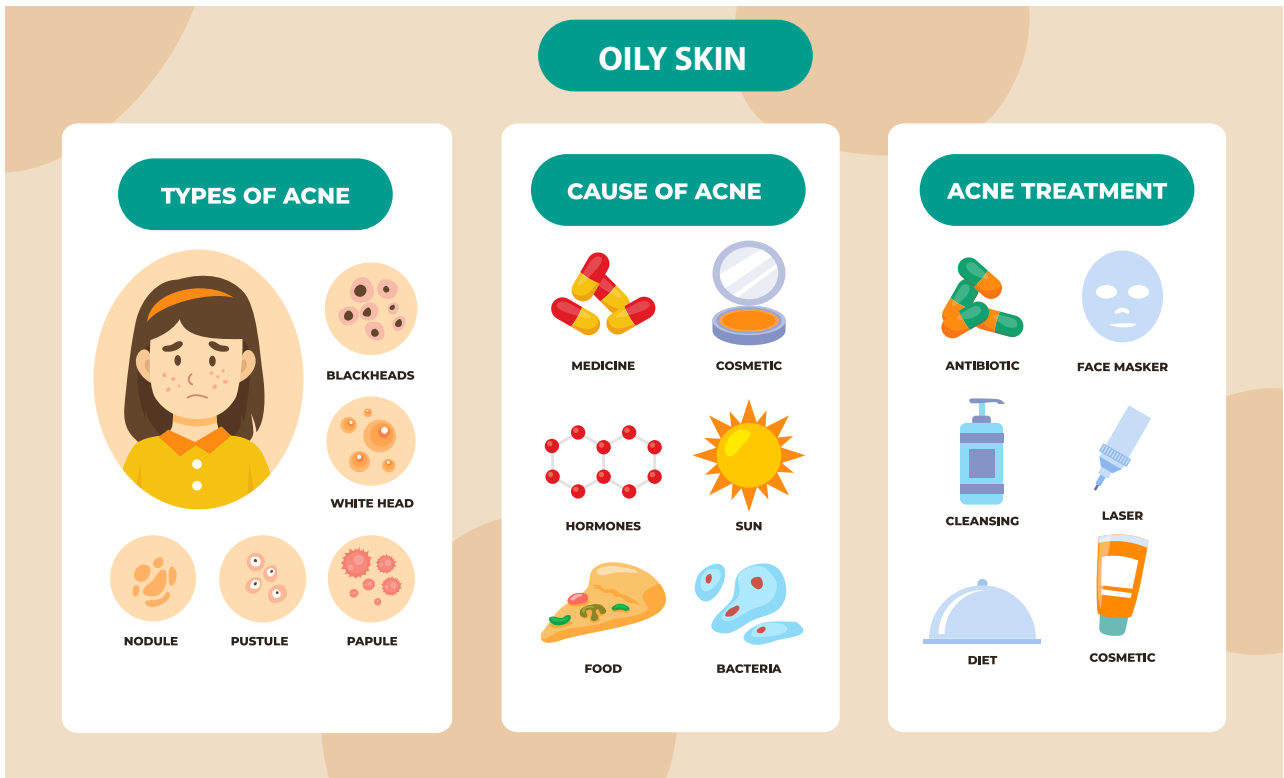


Figure 2: An illustration of the different kinds of acne associated with an oily skin type, the possible causes and some non-pharmacological treatment options that exist

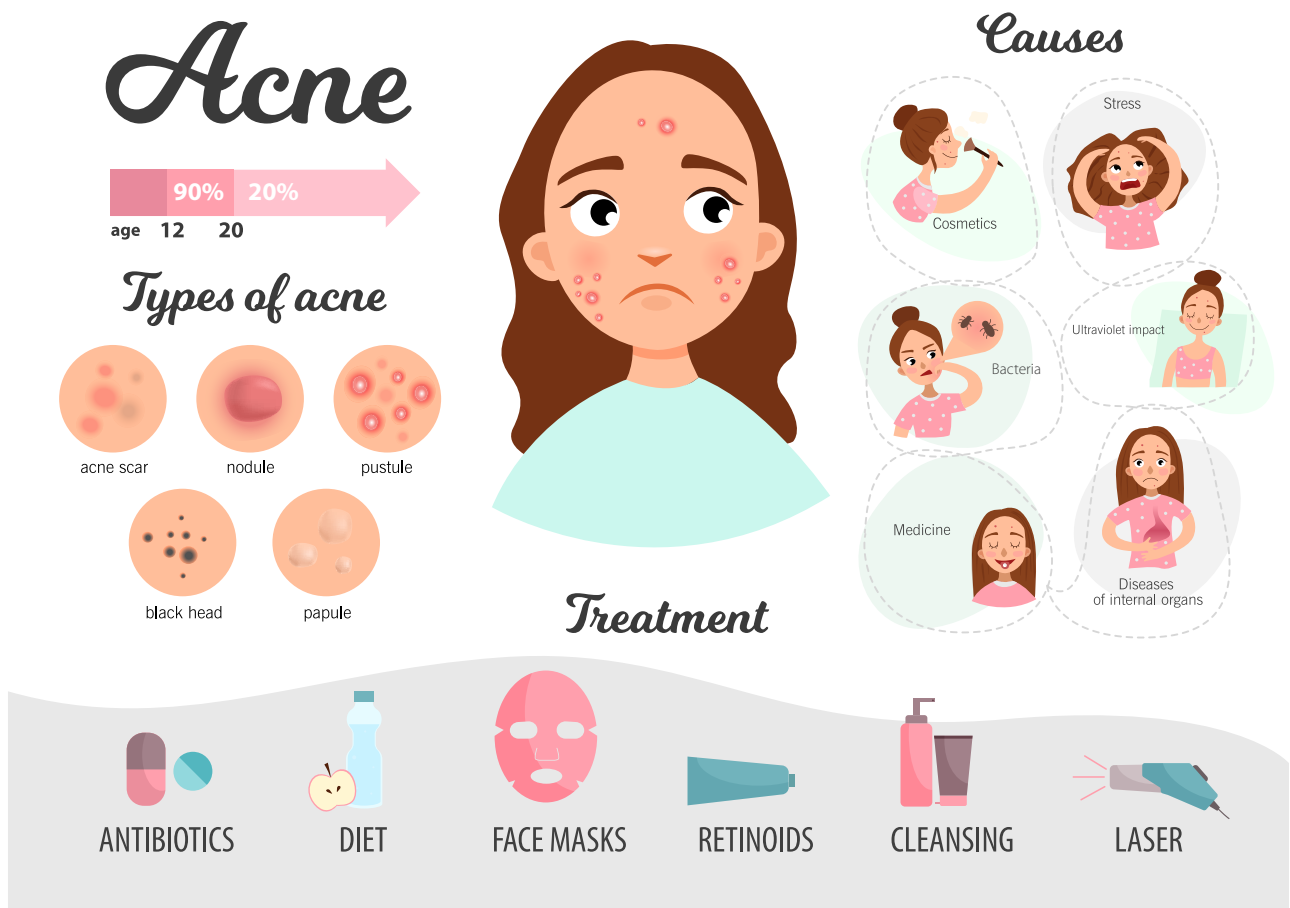


Figure 3: An illustration of the causes of acne, types of acne, and acne treatment

Table I: Some OTC products available in South Africa that are used for the management of acne

Trade name	Indication(s)	Some ingredients	Instructions for use
Cuticura^{®1} (variety of products)	<ul style="list-style-type: none"> • Pimples • Normal to oily skin • Exfoliates the skin • Reduces oiliness • Moisturises the skin • Reduces the size, redness, swelling and discomfort of the affected skin area • Contains SPF 15 sun protector 	Salicylic acid , tea tree oil, jojoba oil, Aloe vera, witch hazel, grapefruit extract, lemon extract	<ul style="list-style-type: none"> • Wash irritated skin using slow circular movements • Rinse well • Pat the skin dry with a soft towel/facial tissues • Apply the moisturiser and SPF 15 cream
Beauty Formulas[®] (variety of products)	<ul style="list-style-type: none"> • Oily skin • Targets spots and blemishes • Helps clear blocked pores • Exfoliates the skin 	Hyaluronic acid (sodium), retinol, honeycomb, tea tree, witch hazel, marine collagen, ginkgo, mulberry, activated charcoal, jojoba, ginger, turmeric, hemp (organic), almond oil, cocoa butter, peppermint, vit E, pro B5, vit C	<ul style="list-style-type: none"> • Wash irritated skin using slow circular movements • Rinse well • Pat the skin dry with a soft towel/facial tissues • Apply the moisturiser and SPF 15 cream
Benzac[®] AC 5 and 6 (variety of products)	<ul style="list-style-type: none"> • Acne • Suitable for treating acne over large body areas, e.g., chest and back 	Benzoyl peroxide 5 g/100 g	<ul style="list-style-type: none"> • Apply 1–2 times daily to affected areas • Rub in gently, leave in contact with the skin for 30 seconds before rinsing off with water (facial wash) • Pat the skin dry with a soft towel/facial tissues
Demelan[®] (variety of products)	<ul style="list-style-type: none"> • For pimple-prone skin (contains salicylic acid that dislodges blackheads, whiteheads, and pimples) • Removes excess oil and impurities • Improves skin texture and radiance by removing dead skin cells • Reduces redness and excess oil • Soothes skin irritations 	Salicylic acid: 2% m/m per 50 ml bottle	<ul style="list-style-type: none"> • Cleanse daily before treatment or when necessary • Gently apply to the affected area until completely absorbed • Rinse with warm water • Pat the skin dry with a soft towel/facial tissues • Use until the skin has improved • See a healthcare professional (HCP) if there is no improvement within 4 weeks • Do not use with other skin-peeling preparations • Avoid contact with eyes and mucus membranes – in case of contact, rinse thoroughly with water • When hypersensitivity to any of the ingredients is experienced, and in severe cases of pimple outbreaks – discontinue use • For external use only
Eskamel[®] (variety of products)	<ul style="list-style-type: none"> • Acne 	Salicylic acid , tea tree oil, African potato, charcoal, <i>Aloe</i>	<ul style="list-style-type: none"> • Cleanse daily before treatment or when necessary • Gently apply to the affected area until completely absorbed • Rinse with warm water • Pat the skin dry with a soft towel/facial tissues • Use until the skin has improved • Warning: avoid contact with eyes
Eucerin[®] DERMOPURIFYER (variety of products)	<ul style="list-style-type: none"> • Acne • Antibacterial and non-comedogenic • Anti-inflammatory (natural ingredient) and oxidant to smooth and calm skin • Daily use for gentle, effective cleaning of oily, impure and acne-prone skin • Sebum-absorbing particles visibly refine pores and mattify skin • Soothes and intensely hydrates dry skin (common side effects of medical acne treatment) • Adjunctive treatment with acne medication (e.g., isotretinoin [e.g., Roaccutane[®]]) • Regulates sebum production • Skin protection – contains SPF 50 (for irritation caused by common acne medication) 	Licochalcone A, decandiol, L-carnitine, 6% amphi-tensides	<ul style="list-style-type: none"> • Use 2 times daily (morning and evening) for gentle, effective cleaning of oily, impure and acne-prone skin • Wet area to be washed with warm water • Apply to hands and work into a lather (facial wash) • Gently massage the face and other affected areas • Rinse thoroughly (facial wash) • Pat the skin dry with a soft towel/facial tissues • Apply every morning to a well-cleansed face and other affected areas by gently massaging the cream into the skin • Avoid contact with eyes • External use alone

Trade name	Indication(s)	Some ingredients	Instructions for use
Simple Aloe® regenerating gel	<ul style="list-style-type: none"> Acne Provides relief for tired and stressed skin Stimulates and revitalises the skin Moisturising properties (acts as a moisturiser which forms a barrier against the elements) Effective restoration of problem skin conditions Amino acids rejuvenate skin cells Improves blood circulation, oxygen levels and restores the pH of the skin 	90% <i>Aloe ferox</i> (extracted from the leaf of the <i>Aloe ferox</i> plant with an exceptionally high calcium and amino acid content)	<ul style="list-style-type: none"> Use 2 times daily (morning and evening) Wet area to be washed with warm water Apply to hands and work into a lather Gently massage the face and other affected areas Rinse thoroughly Pat the skin dry with a soft towel/facial tissues For gentle, effective cleaning of oily, impure and acne-prone skin, use before applying day/night moisturiser Avoid contact with the eyes and open wounds If hypersensitivity occurs – discontinue use
Zinplex® (variety of products) tablets	<ul style="list-style-type: none"> Acne^{3,4} (assists in the treatment and prevention) Pimples For normal and oily skins Deep control to deep-cleanse normal-dry skin Helps skin oiliness and combat problem skin types Prevention of skin problems by cleansing skin and pores and removing excess sebum Assists in maintaining the equilibrium between moisture and oiliness Ensure that the skin is nourished with essential amino acids and vitamins Protection of the skin against harsh environmental conditions 	<p>Zinc (sulphate), Kalahari watermelon (<i>Citrullus lanatus</i>)</p> <p>Zinplex® Zinc tablets Zinc picolinate 39.6 mg (equivalent to 8.3 mg elemental zinc), selenium amino acid chelate 1 mg (equivalent to 20 µg elemental selenium)</p> <p>Zinplex® Zinc triple tablets Zinc picolinate 119.2 mg (equivalent to 25 mg elemental zinc), selenium amino acid chelate 3 mg (equivalent to 60 µg elemental selenium)</p>	<ul style="list-style-type: none"> Use 2 times daily (morning and evening) Wet area to be washed with warm water Apply to hands and work into a lather (face wash) Gently massage the face and other affected areas Rinse thoroughly Pat the skin dry with a soft towel/facial tissues Rinse off with water and pat dry Avoid the sensitive eye areas For external use alone If hypersensitivity occurs – discontinue use <p>Zinplex® Zinc tablets Indicated for children > 6 years of age</p> <ul style="list-style-type: none"> Children: 6–9 years: <ul style="list-style-type: none"> <i>Therapeutic dose:</i> 1 tablet 3 times daily for 5 days <i>Maintenance dose:</i> 1 tablet daily or as prescribed by doctor/HCP Children: 9–13 years: <ul style="list-style-type: none"> <i>Therapeutic dose:</i> 1–3 tablets 3 times daily for 10 days <i>Maintenance dose:</i> 1–3 tablets daily Children > 14 years: <ul style="list-style-type: none"> <i>Therapeutic dose:</i> 3 tablets, 3 times daily for 10 days <i>Maintenance dose:</i> 3 tablets daily <p>Zinplex® Zinc triple tablets Indicated for children > 14 years of age</p> <ul style="list-style-type: none"> Children > 14 years: <ul style="list-style-type: none"> <i>Therapeutic dose:</i> 1 tablet 3 times daily for 10 days <i>Maintenance dose:</i> 1 tablet daily or as prescribed by a doctor/HCP

Pharmaceutical active ingredients are highlighted; ²For this article, reference is made to acne alone, although it is also used for elevating symptoms of the following skin conditions: eczema, psoriasis, insect bites, rashes (heat/shaving), sun spots/liver marks, starch marks, sunburn, mouth sores/blisters, bruises and burns; ³For this article, reference is made to acne alone, although it is also used for elevating symptoms of the following conditions: eczema, colds, cold sores, boosting the immune system and stimulates nail and hair growth (Zinplex® Zinc tablets); ⁴For this article, reference is made to acne alone, although it is also used for eczema, boosting the immune system, stimulation of nail and hair growth, activation of > 300 enzymatic reactions in the body reducing colds and cold sores and the incidence of flu, assists patients with human immunodeficiency virus (HIV) and tuberculosis (TB) (Zinplex® Zinc triple tablets)

Note: This table contains examples of some OTC analgesics available on the South African market. This is not an exhaustive list of OTC/S0–S2 skin products used to manage acne, and neither does it indicate which products are superior to others.

Some guidelines for the pharmacist’s assistant

- Explain to the patient what the pathogenesis (development) of acne is.
- Provide the patient with information on the latest products on the market and how they work (mechanism of action).
- Supply advice to the patient regarding the use of products/medicines.
- Enquire if the patient is taking other medication. If yes, ask which medication is used (mention that taking isotretinoin [e.g., Roaccutane®] and oral tetracycline [e.g., Tetralysal®, an antibiotic] is not allowed to be taken when the patient is planning to become pregnant or is pregnant).
- Ask if the patient is pregnant (ask with the utmost respect, as some people look pregnant and are not).
- Encourage sales of a sunblock (SPF 50) and lip balm when isotretinoin is prescribed. This will aid in protecting the skin against the sun and provide moisture to dry lips (good ‘add-on’ sale).
- Encourage patients not to pick on their acne scars.
- Encourage patients to wash their hands when they touch the acne-affected areas.
- Explain to patients that they should apply basic skincare to manage their acne.
- Educate and remind patients to avoid harsh skin washing (avoid

scrubs or exfoliating devices) as this may damage the natural skin barrier function. Cleansers with a pH of 5.5 should be favoured over traditional detergents (e.g., soaps), allowing for a gentle cleansing of the skin and for a reduction of the particle load on the skin in the evening. The optimal frequency of cleansing should be twice a day.

- Explain and educate the patient about acne and state that the treatment aims to be cosmetically advantageous and prevent permanent scarring. Should the diet be implicated, necessary dietary changes must be made, and psychological factors must be eliminated as far as possible.
- Suggest to the patient that they should shampoo their hair more regularly, as the oil from oily hair can seep down their face and may cause acne. The patient should also keep their hair away from their facial areas.
- Educate the patient using benzyl peroxide about its side effects, e.g., drying, burning, and peeling of the skin and that in such cases, they can stop the treatment for a day or two before starting it again, also mention that benzyl peroxide bleaches materials and that they should be careful when using a coloured towel/shirt.
- Inform patients suffering from acne that you are a pillar of support for them, and that, together with the pharmacist, you can refer them to the relevant people/instances that can aid in alleviating depression, suicide idealisation and low self-esteem (if associated with acne).

- Accept the responsibility to refer a patient to a pharmacist, who may then refer the patient to doctors or dermatologists.

Conclusion

Acne is a common skin disorder that needs special attention when presenting for the first time. Many patients suffering from mild-moderate acne require special attention. Treatment may not only include identifying the stage (type) of acne, suggesting initial use of OTC products, and supplying patients with advice regarding their daily skin care, but also when to refer a patient. The PA will refer the patient to a pharmacist if needed. Patients should be treated in a holistic manner which not only includes OTC medication and scheduled medication but should also include providing a pillar of support for the psychological wellbeing of the patient. The PA, together with the pharmacist, plays a cardinal role in managing acne.

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Iron deficiency in female endurance athletes

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Introduction

High-intensity and endurance exercise increases iron losses by up to 70% compared to the sedentary population. Inadequate iron intake, inability to absorb iron, blood loss, genetics and an increased need for iron place female endurance athletes at risk of developing iron deficiency. It's no surprise then that iron deficiency is a common health concern affecting up to 15–35% of female endurance sports athletes.

Iron deficiency means that there is a deficiency of iron in the body. When an iron deficiency becomes more severe, the body cannot make enough red blood cells, and anaemia develops.

Iron plays an important role in delivering oxygen to the body and maintaining energy, health and performance. Low iron stores are detrimental not only to the overall health of female endurance athletes but also to their capacity to train, recover and deliver optimal athletic performances.

What is iron, and why is it important?

Iron is an essential mineral involved in several important roles in the body, including energy metabolism, oxygen transport, acid-base balance, physical growth, neurological development, cellular functioning, and the synthesis of some hormones.

Iron is mostly found within red blood cells. Red blood cells are filled with haemoglobin. Oxygen picked up in the lungs binds to the iron inside haemoglobin to get carried all over the body to supply oxygen to organs and tissues. Iron is also found in muscle cells called myoglobin. Myoglobin accepts, stores, transports, and releases oxygen in the muscle tissue.

Iron is stored in many parts of the body, including the liver, bone marrow and muscle. If iron stores become depleted because of

inadequate iron levels, the ability to supply oxygen throughout the body is greatly reduced.

Where do we get iron from?

Iron comes from a healthy diet. Dietary iron can be classified into heme iron and non-heme iron.

Heme iron is found in meat, poultry, and fish. It is absorbed about twice as well as non-heme iron. Red meat contains about three times as much iron as both poultry and fish. Non-heme iron sources include fruits, vegetables, whole grains, nuts, seeds, legumes and iron-fortified foods.

Why do female endurance athletes lose more iron?

Sweat

Many factors may contribute to the loss of iron; however, in endurance athletes, iron may especially be lost through sweat. Exercising thus for prolonged periods, multiple times per day or in hot weather, could ultimately affect the body's iron status.

Blood loss

During exercise, the sympathetic nervous system speeds up the heart rate and delivers more blood to areas of the body that need more oxygen (like the lungs and muscles). This can cause a decrease in blood flow to the intestines by more than 50%, leading to possible necrosis and mucosal bleeding of the gastrointestinal tract (GIT). Constant training and/or competing can cause blood loss through the GIT contributing to iron deficiency seen in athletes.

Female athletes of reproductive age are at higher risk for iron deficiency compared to male athletes due to monthly blood loss associated with menstruation.

Diet

The importance of the power-to-weight ratio and the perceived benefit of having a lower body weight in endurance sports can

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cause low-calorie intake and, as a result, insufficient dietary iron intake. Compared to the actual needs of the athlete, the deficiency in dietary intake increases the chance for iron deficiency.

Other factors

Red blood cells break down faster in athletes. For example, the mechanical force of a foot strike during endurance running can destroy red blood cells in the feet.

During the acute inflammatory response following exercise, hepcidin, an iron-regulating hormone, is upregulated, which impairs the absorption of iron.

What are the symptoms of iron deficiency in endurance athletes?

Iron is necessary for oxygen transport and energy metabolism. Therefore, athletes with an iron deficiency can experience a decline in exercise capacity and VO₂ max (the maximal amount of oxygen the body can use).

In addition to the negative impact on athletic performance, athletes may experience the following symptoms:

- general fatigue
- increased heart rate
- shortness of breath during exercise
- headaches and dizziness
- feeling cold in extremities
- a decreased immune system
- spoon-shaped or brittle nails
- cracked lips and/or pale appearance
- cravings for ice chips, clay, dirt, or paper
 - A craving for ice chips is very specific to iron deficiency; athletes experiencing this should have their iron levels checked.

How is iron deficiency diagnosed?

Iron deficiency is diagnosed through blood tests. The most useful of the typical iron study panel is ferritin, a marker of iron stores. The diagnosis of iron deficiency is confirmed by any one of the following findings in the appropriate clinical setting:

- Serum ferritin < 30 ng/ml
- Transferrin saturation ≤ 19%, mostly used in athletes for whom the ferritin is thought to be unreliable due to an inflammatory state/active infection

Every athlete's physiology and training demands are different; as such, ferritin goals vary between athletes and should be individualised.

How is iron deficiency treated?

Self-diagnosing an iron deficiency is not advised. If an athlete is concerned that they might be iron deficient, blood tests should be done to confirm the diagnosis.

If an iron deficiency is diagnosed, replenishing iron levels through dietary means is always preferable to taking an iron supplement. However, based on the severity of the iron deficiency, a medical practitioner may prescribe an iron supplement. If oral therapy fails, intravenous therapy can be recommended as the last step.

Iron supplements

There are many oral iron supplements available in several different formulations with various amounts of elemental iron, iron salts, complexes and combinations. The most commonly available supplements include ferrous sulphate, ferrous gluconate, ferric citrate, and ferric sulphate. Ferrous iron is more bioavailable than ferric iron. Other forms of supplemental iron, such as heme iron polypeptides, carbonyl iron, iron amino-acid chelates, and polysaccharide-iron complexes, are proposed to offer fewer GIT side effects.

Iron supplements can cause gastric upset, including constipation, nausea, abdominal pain, vomiting, and diarrhoea. However, taking an oral iron supplement with food (preferably food that doesn't contain calcium) may improve the gastric side effects experienced.

Very high doses can lead to gastritis, gastric lesions, and iron deposits in the gastric mucosa. In severe iron overdoses, corrosive necrosis of the intestine can cause fluid and blood loss, shock, tissue damage, organ failure, coma, convulsions, and even death.

Factors to consider to improve iron absorption

- Milk, coffee, and tea can decrease the absorption of iron.
- Food, especially calcium-containing food, can impair iron absorption.
- Vitamin C improves the absorption of non-heme iron in the digestive tract.
- Iron can interact with several medications. Discuss the use of chronic medications and/or antibiotics with the patient, where in doubt, ask your pharmacist.

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Matters of the heart

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Introduction

It is always important to take care of the heart, but it is especially important for those patients who have already had a heart attack or have existing heart disease. This article will discuss ways in which patients can improve the overall health of their hearts and help prevent the recurrence of a heart attack.

Lifestyle changes to keep the heart healthy

Patients can change their lifestyles to improve their heart function and lower their heart rate. Lifestyle changes may include exercise, reducing risk factors and dealing with stress, anxiety, and depression.

Exercise should include large muscle use and aerobic exercise and may include walking, jogging, swimming, cycling, rowing, and stair climbing. It is important that patients work with a health professional to assist them in drawing up an exercise programme based on their fitness level and abilities, the programme can then be intensified over time.

Patients should exercise three to five times weekly, starting with a 5- to 10-minute warm up, 20 minutes working out and another 5- to 10-minutes to cool down. The warm-up and cool-down periods are essential, and eliminating them can increase the risk of heart-related conditions.

Risk factors should be reduced and include the following:

- Stop smoking
- Cut down on alcohol consumption
- Follow a healthy eating plan in consultation with a dietitian
- Manage high blood pressure
- Manage high cholesterol
- Manage diabetes
- Management of stress and anxiety related conditions – this will require the assistance of a healthcare professional

- Get an annual flu vaccine, the COVID-19 vaccine and, if necessary, the pneumococcal vaccine

The doctor may also prescribe several medications to manage the patient's existing cardiovascular condition. The PA can promote compliance to the medication as prescribed by the doctor. One of these treatments may include the use of daily low-dose aspirin.

How does aspirin work to prevent a heart attack?

The most common forms of cardiovascular disease start when fatty deposits called plaques form on the walls of arteries throughout the body (also called atherosclerosis). When one of these plaques ruptures, through various mechanisms, a blood clot can form. If the arteries in the heart are already narrow due to fatty deposits, the blood clot can block the blood flow to the heart resulting in a heart attack.

Aspirin interferes with the blood's clotting action, preventing the clots and, therefore, potentially preventing a heart attack.

Who should take daily low-dose aspirin?

Patients should only take daily low-dose aspirin if it is recommended to them by their doctor. Low-dose aspirin is usually recommended for the following patients:

- Patients who had a previous heart attack
- Patients with high cholesterol
- Patients with high blood pressure
- Patients who have unstable angina
- Patients who have stable ischaemic heart disease, including those who have had coronary artery bypass surgery
- Patients who have coronary or peripheral artery disease
- Patients who have had a stent inserted in a coronary artery

What are the risks of taking low-dose aspirin?

The main concern with low-dose aspirin use is that it can increase the risk of bleeding, most commonly in the gastrointestinal tract

but also in other places, with bleeding in the brain being the most serious. Some people have a higher risk of bleeding, e.g.:

- Patients older than 65 years of age
- Patients with a history of stomach ulcers
- Patients with bleeding disorders such as haemophilia or Von Willebrand disease
- Patients with alcohol addiction
- Patients on high doses of anti-inflammatory drugs such as naproxen or ibuprofen
- Patients on oral treatment with corticosteroids
- Patients taking other anticoagulants, such as warfarin
- Patients taking certain herbal and dietary supplements such as capsaicin, evening primrose oil, ginkgo, kava, fish oil and others

Other factors that can make aspirin use dangerous can include:

- Patients with kidney failure
- Patients with severe liver disease
- Patients who are sensitive or allergic to aspirin
- Patients with asthma

Patients who are pregnant or breastfeeding should discuss the safety of low-dose aspirin with their healthcare providers before starting treatment.

How to take low-dose aspirin

The protective benefits of aspirin for heart disease occur at doses between 75 and 100 mg per day. Patients should take aspirin once a day during or after a meal, with a full glass of water to help prevent an upset stomach. A missed dose should be taken as soon as the patient realises that it was missed. However, if it is time for the next dose, the usual dose should be taken. It is not recommended to take a double dose to catch up on missed doses.

Table I provides a list of some of the low-dose aspirin products available in South Africa.

Table I: Low-dose aspirin products available in South Africa

Trade name	Description
Aspirin Teva® 80	80 mg dispersible tablets
Bayer® Aspirin Cardio 100	100 mg enteric-coated tablets
Disprin® CV	100 mg dispersible tablets
Ecotrin®	81 mg enteric-coated tablets
Myoprin® 100	100 mg tablets

It is important to take low-dose aspirin as recommended by the doctor. Patients going for dental procedures or surgery should discuss with the doctor treating their heart condition whether aspirin therapy should be stopped or not.

Side effects of aspirin treatment

Some of the side effects of aspirin can include diarrhoea, itching, nausea, skin rash and stomach pain. However, patients experiencing any of the following should contact their doctor:

- Unusual bruising
- Nosebleeds
- Unusually heavy menstrual bleeding or unexpected vaginal bleeding
- Heavy bleeding after injury
- Blood in the stools or black, tarry stools
- Coughing up blood
- Vomiting material that looks like coffee grounds
- Dizziness or difficulty swallowing
- Wheezing, breathing difficulty, tightness or pain in the chest
- Swelling in the face or hands
- Skin rash, itching, or hives

Conclusion

Patients can reduce the risk of a subsequent heart attack by reducing their risk factors for heart disease and adhering to a healthy diet and exercise programme. Daily low-dose aspirin may be beneficial but is not recommended for everybody. The doctor will assess the patient's age, overall health, history of heart disease and the risk of having a future heart attack to decide whether low-dose aspirin is recommended. Aspirin can increase the risk of bleeding, and those who are recommended to take low-dose aspirin daily should take it with or after a meal.

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Reference: (1) Antithrombotic Trialists' Collaboration. Collaborative meta-analysis of randomised trials of antiplatelet therapy for prevention of death, myocardial infarction, and stroke in high risk patients. BMJ. 2002; 324 (7329): 71 - 86.
For full prescribing information refer to the package inserts approved by the medicines regulatory authority.



Why is your eye dry?

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Introduction

Dry eye syndrome, also known as dry eyes, is a common condition that occurs when the eyes don't produce enough tears, or the quality of the tears is poor. Tears help lubricate and nourish the eyes. They also wash away foreign matter and keep the surface of the eyes smooth and clear. Without enough tears, the eyes can become dry, irritated, and inflamed. Dry eyes feel uncomfortable and may sting or burn and could even cause vision problems.

In certain situations, a person may be more prone to experience dry eyes, such as on an airplane, in an air-conditioned room, while riding a bike, spending time outside in windy areas or after looking at a computer screen for an extended period. Another reason for dry eyes can be an inadequate quality and quantity of tear production or when tear production and drainage are out of balance.

When there is inadequate amount of tear production, it could be attributed to age, various medical conditions or as a side effect of certain medications. Tears are made up of three layers, namely oil, water, and mucus. A smooth oil layer helps prevent evaporation of the water layer, while the mucin layer spreads the tears evenly over the surface of the eye. Poor quality of tears occurs when one of the three layers develops a deficiency.

Types of dry eye disease

There are three types of dry eye disease.

- **Aqueous deficient dry eye:** This is when the eyes don't produce enough tears. The lacrimal gland (in the upper, outer corner of each eye) produces the aqueous tears. These tears make up the middle, watery layer of the tear film. Some autoimmune conditions like Sjogren's syndrome and rheumatoid arthritis can cause inflammation in the lacrimal gland and prevent it from producing enough aqueous tears.
- **Evaporative dry eye:** This is when the tears evaporate too

quickly. One of the most common causes is meibomian gland dysfunction. This means the glands in the eyelids that produce the outer, oily layer of the tear film don't work properly. As a result, the oily layer is unstable and can't protect the watery layer from drying up.

- **Mixed dry eye:** Some people have aqueous tear deficiency and tear instability. This means the eyes don't produce enough tears, plus the tear film is unstable.

Some people are more prone to getting dry eyes than others. For example, older adults, women, and people wearing contact lenses are likelier to experience dry eyes.

Causes

The causes of dry eyes can be multifactorial, but some common ones include:

- Ageing – dry eyes are a part of the natural ageing process, and many people over 65 experience the symptoms of dry eyes.
- Hormonal changes during pregnancy or during and after menopause can cause dry eyes.
- Environmental factors such as dry air (weather-related or because of air-conditioning), wind, and pollution like smoke.
- A diet low in vitamin A (found in liver, carrots and broccoli) or omega-3 fatty acids (found in fish, walnuts and vegetable oils) is also a risk factor for experiencing dry eyes.
- Medical conditions such as diabetes, autoimmune disorders, and thyroid problems.
- Certain medications such as antihistamines, decongestants, diuretics, certain heart medications, birth control pills, tranquilisers, and some antidepressants.

Symptoms

Symptoms of dry eyes can vary, but common ones include:

- A stinging, burning, gritty or scratchy sensation in the eye often accompanied by the feeling of something in the eye
- Redness and irritation in the eyes
- Sensitivity to light

- Watery or teary eyes
- Mucus that makes the eyes feel “glued shut” when waking up in the morning
- Blurred vision
- Eye fatigue or eyestrain that often feels worse late in the day
- Difficulty or discomfort when wearing contact lenses

Treatment options

Treatments for dry eyes focus on restoring or maintaining the normal amounts of tears required for comfort and maintaining eye health. The best treatment depends on the underlying cause and severity of the condition. Some treatments focus on reversing or managing a condition or factor causing dry eyes. Other treatments

can improve the tear quality or stop the tears from quickly draining away from the eyes.

Some common treatments include:

- Artificial tears (eye drops or ointments that help lubricate the eyes)
- Prescription eye drops that help increase tear production or reduce inflammation
- Plugging the openings to the tear ducts with tiny silicone plugs (punctal plugs). These plugs close the tiny opening (punctum) in the inner corner of upper and lower eyelids. This closure conserves both your own tears and artificial tears added.
- Changes in lifestyle or environmental factors (such as using a humidifier, wearing protective eyewear, or taking breaks from screen time)

Table I: Treatment options for dry eye syndrome

Drop	Dosage	Indications	Contraindications and warnings
Artelac® Advanced Lipids Eye Lubricant Drops	<ul style="list-style-type: none"> • 1 drop into the conjunctival sac 3–5 times daily or more frequently 	<ul style="list-style-type: none"> • Suitable for aqueous-tear deficiencies, lipid deficiencies and mucin deficiencies • Preservative free 	
Artelac® Intense Rebalance Eye Drops	<ul style="list-style-type: none"> • 1 drop into conjunctival sac 3–5 times daily or more frequently • Compatible with all types of contact lenses 	<ul style="list-style-type: none"> • Multi-component product relieves symptoms caused by chronic tear dysfunction, such as burning and tired, gritty, red and/or inflamed, painful eyes • Preservative free 	
Artelac® Moisture Eye Drops	<ul style="list-style-type: none"> • 1 drop into corner of the eye 3–5 times daily as needed • Suitable for use in children 	<ul style="list-style-type: none"> • Keeps the surface of the eye moist when production of tears is less than normal • Preservative free 	
Duratears® Eye Ointment	<ul style="list-style-type: none"> • Insert small ribbon of ointment in conjunctival sac, or affected area 	<ul style="list-style-type: none"> • Useful as a lubricant for the eye 	<ul style="list-style-type: none"> • Do not touch the tip of the tube or dropper to any surface • If ocular irritation persists, discontinue use
Rohto® Eye Drops Dry Aid™	<ul style="list-style-type: none"> • 1–2 drops into the affected eye as needed 	<ul style="list-style-type: none"> • Mimics natural tears to restore natural tear film with long-lasting hydration and protection 	<ul style="list-style-type: none"> • Remove contact lenses before use, apply drops and wait 15–20 minutes before wearing contact lenses again • For adults and children over 6 years old
Systane® Balance Lubricant Eye Drops	<ul style="list-style-type: none"> • May be used as needed throughout the day 	<ul style="list-style-type: none"> • Dry-eye therapy for temporary relief of burning and irritation • May be used to treat dry eye associated with contact lens usage • Contains polyquaternium-1 as preservative 	<ul style="list-style-type: none"> • The safety of use in pregnancy and lactation has not been established • Instil drops 10 minutes before inserting contact lenses and after removal of contact lenses
Systane® Ultra Lubricant Eye Drops	<ul style="list-style-type: none"> • 1–2 drops in the eye(s) as needed • Can be used while wearing contact lenses 	<ul style="list-style-type: none"> • Dry-eye therapy for temporary relief of burning and irritation • Contains polyquaternium-1 as preservative 	<ul style="list-style-type: none"> • The safety of use in pregnancy and lactation has not been established • Can be used while wearing contact lenses when minor irritation, discomfort or blurring occurs
Tears Naturale® II Ophthalmic Solution	<ul style="list-style-type: none"> • 1–2 drops as frequently as required 	<ul style="list-style-type: none"> • An artificial tear treatment for both mucin-deficient and aqueous-deficient dry eye conditions • Contains polyquaternium-1 as preservative 	
optive Plus Eye Drops™	<ul style="list-style-type: none"> • 1–2 drops as frequently as required 	<ul style="list-style-type: none"> • Triple-action formula that lubricates the surface of the eye and moisturises the ocular surface cells by restoring osmotic balance plus protecting natural tears with a lipid enhancement 	<ul style="list-style-type: none"> • Allow 5 minutes between the administration of ophthalmic products

Note: Always shake the drops before use, and to avoid contamination, never touch the dropper tip of the container to any surface

Contact lens wearers should select preservative-free preparations.

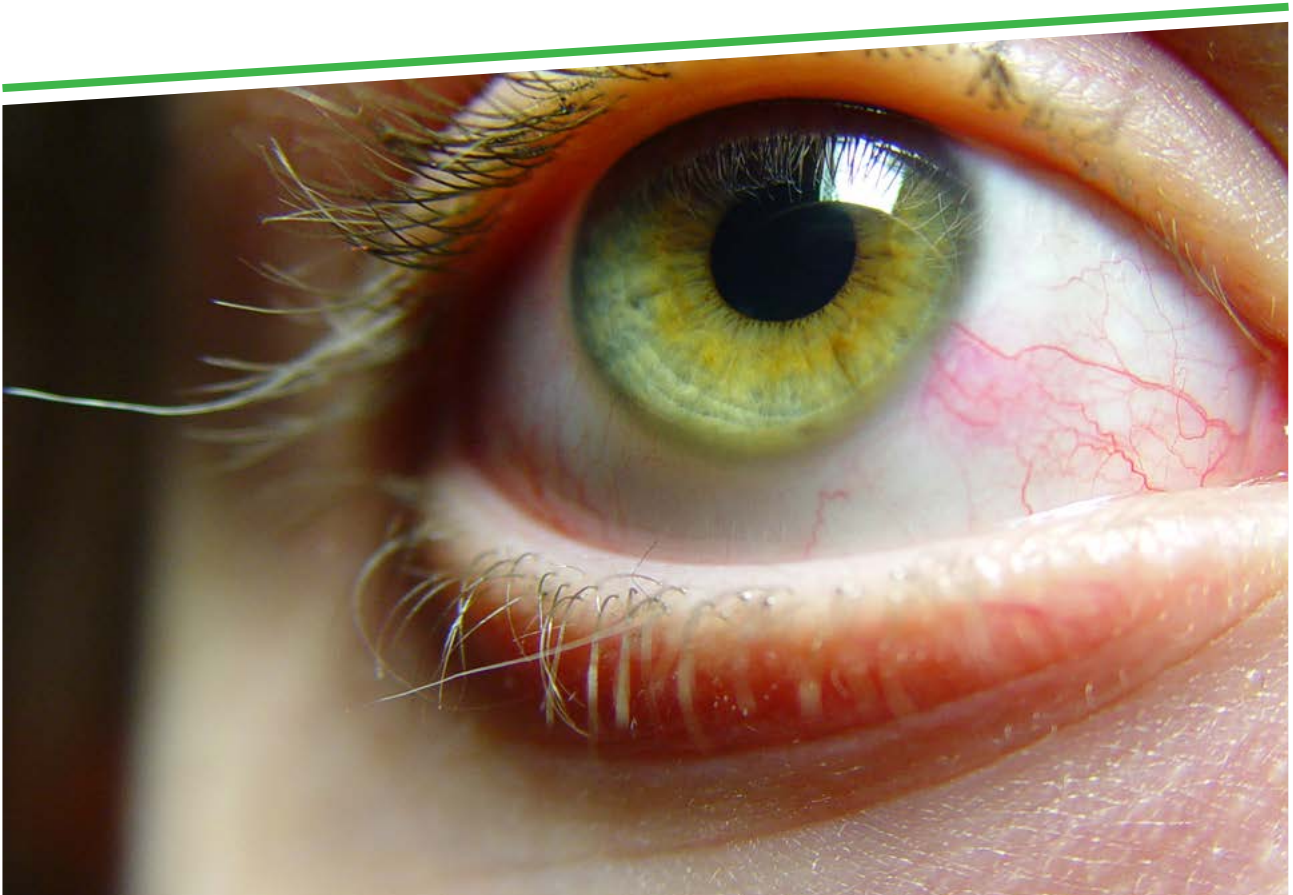
There are also some steps a person can take to avoid getting dry eyes:

- Blink frequently when using a computer or other digital devices.
- Use a humidifier to add moisture to the air.
- Wear protective eyewear, such as wraparound glasses, when outside on windy or dry days.
- Take breaks from screen time and focus on objects at a distance.
- Avoid smoking and exposure to second-hand smoke.
- Eat a healthy diet rich in omega-3 fatty acids, which are essential for eye health.

Table 1 summarises some treatment options for dry eye syndrome. Often therapy requires an individual dosage regimen according to the severity and intensity of the symptoms experienced.

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What a pharmacist's assistant needs to know about over-the-counter Schedule 0–2 analgesics

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Introduction

Various over-the-counter (OTC) analgesics are available in a pharmacy setting. Like many other medications, these analgesics have a scheduling number (S-number) attached to them. The meaning of schedules (S) (ranging from S0–S8) is a classification system that indicates the levels of risk and benefits for patients for that specific schedule. As the schedule number increases, the risk(s) will also increase. This will also imply that different schedules of medicine are located in different areas in the pharmacy – some in the front shop (freely available to the public) or in the dispensary (at the back of the pharmacy).

This article aims to provide the pharmacist's assistant (PA) with a basic overview of OTC S0–S2 analgesics and some useful questions/guidelines when patients indicate they need an OTC analgesic.

Scheduling status

For this article, focus will be placed on Schedule 0 (S0), Schedule 1 (S1) and Schedule 2 (S2) analgesics alone.

The information below is from the South African Health Products Regulatory Authority (SAHPRA) website, and contains some information about the scheduling principles of S0, S1 and S2 medicines. The content is taken directly from the 'SAHPRA SAHPGL-CEM-NS-02: Guideline to the scheduling of substances and medicines.'

Principles of scheduling

In terms of the Medicines Act 101 of 1965, a 'Scheduled substance' is defined as follows: "[a scheduled substance] means any medicine or other substance prescribed by the Minister under Section 22A".

Section 22A(2) empowers the Minister of Health ('on the recommendation of SAHPRA'), to make [name] the schedules referred to in that section ... Section 37A also empowers the Minister (again 'on the recommendation of SAHPRA'), to amend the Schedules by notice in the Government Gazette.

The official Schedules shall, therefore, always be those published in the Government Gazette or amended by subsequent notice in the Gazette. All medicines are subject to a scheduling process on the basis of the substances (active pharmaceutical ingredients [API]) they contain.

Hence – the primary consideration in scheduling a substance is its safety profile in relation to the therapeutic indications for its use. Substances may be listed in one or more of the eight schedules, and products can fall into several different schedules depending on factors such as the amount of API in the product, whether it is combined with another active ingredient, the package size, and whether it is for export.

Codeine-containing products fall into Schedule 2 when codeine is combined with another active ingredient, has a maximum of 10 mg of codeine per pill or capsule, or a maximum of 5 ml of codeine in syrups or suspensions. A maximum dosage of 80 mg or less per day and a package size that allows for no more than five days' treatment is classified as a Schedule 2 substance.

Anything above that, for a combined product of codeine and another API, is Schedule 3 and thus requires a prescription from a doctor.

Description of the Schedules 0–2

Section 22A of the Medicines Act 101 of 1965 provides for a graduated system of control over the sale and supply of substances, ranging from access via any retail outlet, at one extreme, to outright prohibition, at the other.

Schedule 0

Although no list of S0 substances is provided in the Schedules, a preamble states, "This Schedule includes all substances or mixtures of substances subject to registration in terms of the Act and which are not listed in any of the other Schedules." To qualify for Schedule 0 status, a substance must be known to be substantially safe in use, without routine necessity for advice or counselling by a healthcare practitioner (HCP).

Medicines containing one or more substances or APIs, none of which bears a Scheduling status higher than Schedule 0, are indicated for minor diseases or symptoms that the patient can easily recognise and do not require medical diagnoses or monitoring.

Schedule 1

Schedule 1 (S1) substances must therefore be known to be substantially safe in use but might require advice or counselling by a pharmacist or other HCP to ensure safe use. Products containing S1 substances are indicated for minor diseases or symptoms.

Schedule 2

For a substance to be listed in S2, it must be known to be substantially safe in use but requires advice, counselling and management or monitoring by a pharmacist or other HCP.

While medicines containing such substances may be indicated for minor diseases or symptoms that the patient can recognise, these will require verification by a pharmacist but not an initial medical diagnosis or medical management.

Schedule 2 (S2) medicines are therefore available without a prescription but require a greater level of control than S1 medicines.

To ensure the safety of the medicines used, the patients' personal details must be recorded and guidance by a pharmacist/HCP is needed.

For examples of S0–S2 medications, see Table I (analgesics containing one active ingredient), Table II (analgesics containing two active ingredients) and Table III (analgesics containing three active ingredients).

Steps that the pharmacist's assistant can consider when providing a patient with an S0–S2 analgesic

Step one

Some questions that the PA may ask the patient *before* suggesting the type of analgesic needed:

- *Why do you need an analgesic?* (E.g., for headache, toothache, musculoskeletal conditions)

- *Who is this medication for?* (E.g., infants, children, elderly patients, etc.)
- *Do you suffer from any medical conditions?* (E.g., peptic ulcers, epilepsy, depression, anxiety, etc.)
- *Are you taking any other medications?* (E.g., antidiabetics, medicines that calm you [anti-anxiolytics], sleeping tablets, other nonsteroidal anti-inflammatory drugs [NSAIDs], blood thinning medications, etc.)
- *What is the nature of your pain?* (E.g., stabbing, pounding, circulated on one/more area, etc.)
- *Where is the pain situated?* (E.g., head, muscles, teeth, etc.)
- *Are you aware that your pain is associated with certain patterns?* (E.g., high-tension surroundings/situations, after meals, at night, when sitting for a long time, etc.)
- *Have you taken ... (name of analgesics suggested) before?* (Take note that many people take more than one medicine – especially in the elderly – which may lead to an overdose [e.g., paracetamol-containing products])
- *Did you experience any side effects when taking ... (name of the analgesic(s) before?* (E.g., pain, blood in your stools, excessive tiredness, etc.)
- *Can you swallow whole tablets or capsules, or would you prefer a liquid solution/suspension?* (E.g., infants, adults and the elderly, etc.)

The below acronym (**NESCI**) can also be used as a broad guideline when deciding on which analgesic to suggest to the patient:

N – Nature of the pain

E – Educating the patient regarding the safe use of the analgesic

S – Severity of the pain

C – Cause of pain and characteristic of the analgesic

I – Individual patient's needs and provide information when the analgesic may be unsuitable

Step two

Based on the above information, you can now *decide* which analgesic to suggest/would be most suitable. The following are some broad guidelines to help the PA to make an informed decision.

Analgesics containing paracetamol

- Paracetamol is the safest analgesic when administered within therapeutic dosages. It can be given to children over one month of age, adults and the elderly.
- Care should be taken when giving paracetamol to the elderly as this population often takes more than one medicine (polypharmacy), which may also contain paracetamol. Excessive paracetamol use causes irreversible damage to the liver.

Analgesics containing codeine

- Continuous/prolonged use of high doses may lead to dependency, addiction and some degree of tolerance.
- Codeine may cause constipation and should be used with caution when taking anti-diarrhoeal medication.

Analgesics containing nonsteroidal anti-inflammatory drugs (NSAIDs)

- Patients should be advised to take NSAIDs with food, as they can aggravate existing gastrointestinal (GI) conditions such as peptic ulcers and may lead to ulceration and GI bleeding.

Table I: Over-the-counter Schedule 0–2 analgesics containing one active ingredient available in the South African market and some of their indications

Trade name	Active ingredient(s)	Schedule	Indications
Actamol® solution Adco-Napamol® elixir Painamol® syrup	Paracetamol: 120 mg/5 ml	S0	Mild-moderate pain and fever
	Pack sizes < 100 ml	S1	
	Pack sizes > 100 ml	S2	
Adco-Napamol® tablets	Paracetamol: 500 mg	S0	Mild-moderate pain and fever, headache, toothache, pain and fever associated with colds and flu
Actamol® tablets Panado® tablets	Paracetamol: 500 mg	S1	
Calpol® tablets	Paracetamol: 500 mg tablets (film coated) Number of tablets: 6, 10, 12, 16, 24	S0	
	Number of tablets: 48, 96, 100	S1	
Painamol® tablets	Pack sizes < 25 tablets	S1	
	Pack sizes > 25 tablets	S2	
Tylenol® Extended Relief tablets	Paracetamol: 650 mg	S2	
Advil Liqui-Gel® capsules Brufen® tablets	Ibuprofen: 200 mg tablets Ibuprofen: 200 mg (sugar coated) Ibuprofen: 400 mg, 600 mg (film coated tablets)	S1	Mild-moderate pain and fever, headache, minor muscular aches and strains, menstrual associated and pain associated with migraine
Brufen® suspension	Ibuprofen: 100 mg/5 ml (paediatric suspension)	S1	
K-Fenak® tablets	Diclofenac potassium: 50 mg tablets (film coated)	S2	Mild-moderate pain of inflammatory origin (maximum treatment period 3 days), emergency treatment of acute gout attacks (for a maximum treatment period of 3 days)
Voltaren Emulgel® topical gel	Diclofenac diethyl ammonium (1.16 mg correspond to diclofenac sodium 1 g/100 g)	S1	Symptomatic relief of localised traumatic inflammation and pain
Elmetacin® topical spray	Indomethacin: 10 mg/g	S1	Pain, inflammation and swelling associated with generative joint disorders, e.g., rheumatoid disorders, sports and accidental injuries

Note: This is not an exhaustive list of S0–S2 analgesics, and neither does it indicate which products are superior to the other

Table II: Over-the-counter Schedule 0–2 analgesics containing two active ingredients available in the South African market and some of their indications

Trade name	Active ingredient(s)	Schedule	Indications
Anadin® tablets	<i>Normal strength</i> Aspirin: 400 mg Caffeine anhydrous: 22.7 mg	S2	Mild-moderate pain, e.g., headache, toothache, painful periods, joint pain, musculoskeletal pain, pain associated with colds and flu and fever
	<i>Extra strength</i> Aspirin: 500 mg Caffeine anhydrous: 32 mg		
Besemax® tablets	Paracetamol: 450 mg Orphenadrine: 35 mg	S2	Generalised pain and relief of muscle spasms associated with acute, painful musculoskeletal conditions
Tensopyn® syrup	Paracetamol: 150 mg Codeine phosphate: 4 mg per 5 ml (paediatric syrup)	S2	Mild-moderate pain and reduction of fever in febrile conditions
Painamol® Plus tablets	Paracetamol: 500 mg Codeine phosphate: 8 mg		
Panado-Co® effervescent tablets	Paracetamol: 500 mg Codeine phosphate: 8 mg		
Adco-Napacod® tablets	Paracetamol: 500 mg Codeine phosphate: 10 mg		
Spasmend® tablets	Paracetamol: 500 mg Mephenisin: 150 mg	S2	Generalised pain associated with tension
Lotem® suspension	Paracetamol: 250 mg Ibuprofen: 200 mg per 5 ml	S2	Mild-moderate pain and fever
Ibumol® Grape/Banana suspension	Paracetamol: 250 mg Ibuprofen: 200 mg per 5 ml	S2	Mild-moderate pain of inflammatory origin or non-inflammatory origin with/without fever
Mypaid® tablets	Paracetamol: 250 mg Ibuprofen: 200 mg	S2	Relief of headaches of muscular origin, period pain, dental pain, short-term management of pain of inflammatory origin
Ibumol® tablets Ibupain® tablets	Paracetamol: 350 mg Ibuprofen: 200 mg		

Note: This is not an exhaustive list of S0–S2 analgesics, and neither does it indicate which products are superior to the other

Table III: Over-the-counter Schedule 0–2 analgesics containing three active ingredients available in the South African market and some of their indications

Trade name	Active ingredient(s)	Schedule	Indications
Stilpane® syrup Stopayne® syrup	Paracetamol: 120 mg Promethazine: 6.5 mg Codeine phosphate: 5 mg/5 ml	S2	Symptomatic treatment of pain and fever
Ibupain® Forte capsules	Paracetamol: 250 mg Ibuprofen: 200 mg Codeine phosphate: 10 mg	S2	Mild-moderate pain of inflammatory origin with/without fever
Mybucod® capsules	Paracetamol: 350 mg Ibuprofen: 200 mg Codeine phosphate: 10 mg		
Adco-Dol® tablets Codoxol® tablets Pynstop® tablets	Paracetamol: 450 mg Codeine phosphate: 10 mg Doxylamine succinate: 5 mg Caffeine: 30 mg	S2	Mild-moderate pain, pain associated with tension headaches/neuralgia (nerve pain), menstrual pain and fever, symptomatic
Acurate® tablets	Paracetamol: 450 mg Codeine phosphate: 10 mg Doxylamine succinate: 5 mg Caffeine: 30 mg		
Tensopyn® tablets Syndol® tablets	Paracetamol: 450 mg Codeine phosphate: 10 mg Doxylamine succinate: 5 mg Caffeine anhydrous: 30 mg		
Tensopyn® effervescent tablets Betapyn® tablets	Paracetamol: 450 mg Codeine phosphate: 10 mg Doxylamine succinate: 5 mg Caffeine anhydrous: 50 mg (effervescent tablets)		

Notes: This is not an exhaustive list of S0–S2 analgesics, and neither does it indicate which products are superior to the other. In combination analgesics, caffeine is included to increase wakefulness and increase mental activity; doxylamine succinate is included for its sedative and relaxing effects – especially where muscle spasms are causative of pain.

- The concomitant use of NSAIDs (e.g., aspirin) and other blood-thinning medications (anticoagulants) should be avoided as the bleeding time may increase. Using these two medications together requires prior consultation with a doctor/pharmacist.
- Aspirin should be avoided in children under 16 years of age due to the association with Reye's syndrome (liver and brain swelling).

Note: If you feel unsure about which analgesic would be most suited for a particular patient, do not hesitate to ask the pharmacist.

Tables I–III are examples of some OTC analgesics that contain one active ingredient (Table I), two active ingredients (Table II) and three active ingredients (Table III).

Conclusion

There are many OTC analgesics available on the South African market. This includes some that only contain one active ingredient, while others contain two or more active ingredients. These analgesics are scheduled according to the risk-benefit ratio for the patient. Pharmacist's Assistants (PAs) can only suggest S0–S2 analgesics. Care should be taken when suggesting an analgesic to a patient, and it is best done by questioning the patient about what kind of pain is experienced, what the need for the analgesic is, what kind of

medication the patient is using and which medical condition(s) the patient suffers from. By looking at each patient holistically, the PA can play an important role when suggesting appropriate analgesics that are tailor-made for the individual patient's needs.

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