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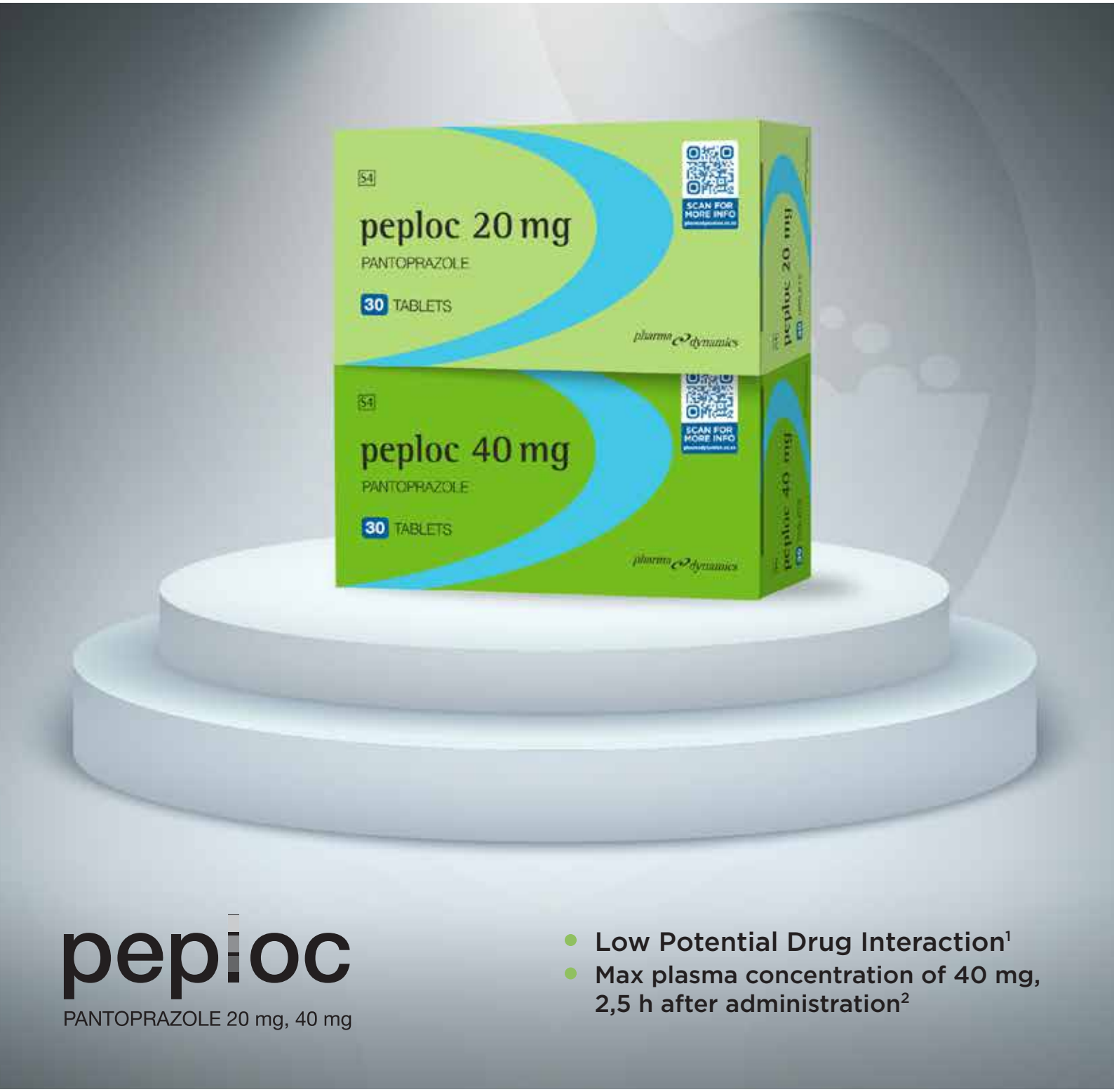

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Achieving quality by using SOPs

Lorraine Osman

We're bombarded with standard operating procedures (SOPs) throughout the working day, but have you ever considered what an SOP is and why we have them? In this article, we're going to take a closer look so that it'll make it easier to understand them, and to comply with them.

The importance of quality

What does the word "quality" mean to you? We often use it when we're describing something that is particularly good, and very often it is used as a standard when we're comparing similar services or products.

It's very simple – the higher the quality of a product or service, the more likely we are to continue using it. We know that the quality of registered medicines is guaranteed if it is registered by the South African Health Products Authority (SAHPRA), but what about services?

When it comes to services, most consumers will rate it according to how you treat them – are you respectful and helpful? And how do you do this? Remember that most people don't want to come to pharmacies – they're not well and they don't want to be there. So it means that you need to be polite and treat them with respect. You also need to make sure that the services that you offer meet their needs must be of the best possible quality. So the next question is: "How do we achieve high quality services?" While a lot depends on you, and how you relate to consumers, we can ensure the quality of our services by complying with SOPs.

What is an SOP?

It is simply a set of instructions on exactly what must be done and how it must be done for a particular task. In the past, when you started a new job, your boss would tell you what to do. It might have been something simple, such as to answer the telephone. Every person would answer the phone in a different way, which would mean that the people phoning in would have a different experience every time they phoned.

Nowadays, an SOP is usually available for just about every task that must take place in the course of the working day.

Do we really need SOPs?

Hopefully, you have not only seen the SOP file in the pharmacy but you are familiar with its contents. It isn't meant to be a file that gathers dust and is brought out when the Pharmacy Council inspects the pharmacy! It's something that will help you to deliver the best possible service to the community that you serve.

The most important aspect of an SOP is that it is a way of ensuring the quality of the work that is done. It doesn't matter whether you're working in a community pharmacy, hospital pharmacy, primary healthcare clinic or pharmaceutical manufacturing plant – in all cases, we are responsible for ensuring that both products and our services are excellent.

Contents of an SOP

It's actually quite easy. You need to know:

- What is it that must be done?
- Why?
- When?
- Where?
- How?
- Who must do it?
- How must the action be documented?

Benefits of having SOPs

At first, it feels as though it's a nuisance having to follow an SOP, but it soon becomes routine. For the employer, it's very useful because it means that everybody who performs a particular task will be doing it correctly and in the same way. SOPs have been shown to improve efficiency, because you know what to do, when to do it and how to do the task. An important benefit is that it prevents misunderstanding because you haven't heard the instruction properly.

When you start a new job, SOPs help you to get to know the way work is done in your new environment. And when you leave a job, they help the person who takes over from you.

Following SOPs when you work reduces the risk of making a mistake. We certainly don't want mistakes to happen, but it does happen. When you make a mistake, it's appropriate to go back to the SOP

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and see where you went wrong – it'll show you how to improve your work.

Mandatory SOPs

The responsible pharmacist may identify specific tasks that require an SOP in a particular pharmacy, but there are some that are compulsory. The South African Pharmacy Council's Good Pharmacy Practice (GPP) rules lists a number SOPs that are mandatory for every type of pharmacy.

A challenge to YOU!

One day, when you have a lot of time and energy, go to the GPP rules and read about the SOPs that are expected in your workplace. Are they in place? If not, maybe you should take the time and trouble to work out what is missing, and prepare a draft for your responsible pharmacist to consider. I guarantee that s/he will be impressed!

Further reading

- https://bizfluent.com/about-5437915-quality-customer-service-important.html.
- Good Pharmacy Practice manual – Rule 4.2.3.3 Standard Operating Procedures.
- https://quickbooks.intuit.com/ca/resources/business/importance-and-benefits-of-standard-operating-procedures/.
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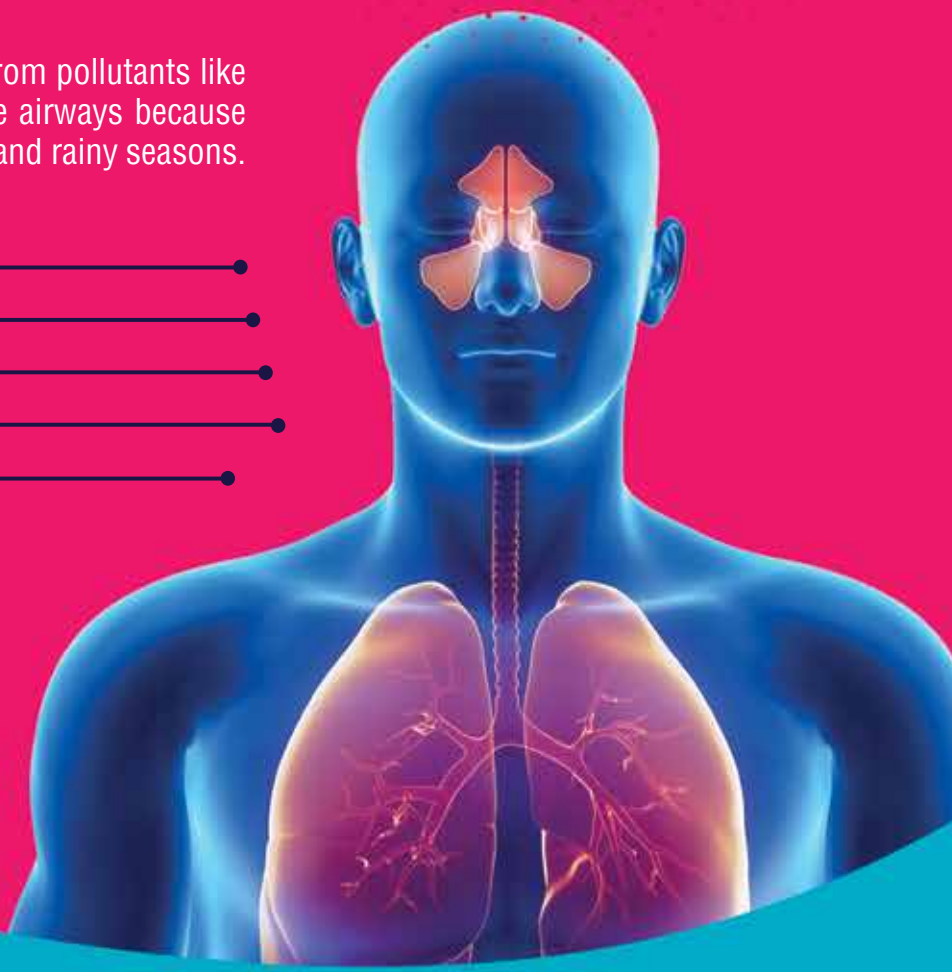

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Over-the-counter management of gastro-oesophageal reflux disease

Stephani Schmidt
Amayeza Information Services, South Africa

Republished from: *SAPA*. 2022 Vol 22 No1

Introduction

There is a high prevalence of heartburn and acid regurgitation (reflux) in the general population, and the severity and frequency of symptoms vary between patients. Some patients may only experience infrequent/occasional reflux, while others may experience severe or frequent episodes which disrupt daily life.

Understanding gastro-oesophageal reflux disease

After swallowing, the food is carried from the mouth via the oesophagus to the stomach. The stomach produces gastric acid that aids in the digestion of food.

When functioning normally, the circular ring of muscles between the stomach and the oesophagus, known as the lower oesophageal sphincter (LOS):

- Opens or relaxes to allow food or liquid in the oesophagus to pass into the stomach.
- Then closes to prevent contents from the stomach (including acid and bile) backing up into the oesophagus.

Reflux occurs when the LOS becomes weakened or relaxes inappropriately thus allowing acidic contents from the stomach to flow back into the oesophagus and/or mouth.

Healthy people of all ages may experience occasional acid regurgitation (reflux), usually after eating a meal. In most cases, it is short-lived, and does not cause troublesome symptoms or complications.

Compared to the stomach lining that is resistant to the irritant effects of acid, the oesophagus is readily irritated by acid (since it does not have a protective lining). Constant reflux of stomach contents from the stomach into the oesophagus can irritate and damage the sensitive lining of the oesophagus causing troublesome symptoms. When this happens, it is referred to as gastro-oesophageal reflux disease (GORD).

Typical symptoms of GORD include:

- Acid reflux (regurgitation) causes an unpleasant sensation of acid at the back of the mouth or throat (sour taste).
- Heartburn is a burning sensation in the centre of the chest (behind the breastbone but can sometimes spread to the throat).

Other symptoms may include:

- Stomach pain (pain in the upper abdomen)
- Chest pain
- Difficulty swallowing (dysphagia)
- Pain on swallowing (odynophagia)
- Hoarseness
- Persistent sore throat or laryngitis
- Chronic cough
- Sensation of a lump in the throat
- Nausea and/or vomiting
- Sleep disturbances

When to refer

Before OTC treatment is considered, it is important to ask the patients about the presence of alarm or "red flag" symptoms. Patients experiencing signs and/or symptoms of a more serious nature should be referred to a doctor (Table I).

Table I: Patients who require referral to the doctor

Red flag symptoms that require referral: • Difficult or painful swallowing • Involuntary (unexplained) loss of weight • Chest pain (to rule out heart disease) • Recent cough or hoarseness • Choking attacks, particularly at night • Persistent vomiting • Signs of bleeding in the gastrointestinal tract, such as blood in stools, black stools, blood in vomit
Referral is also required for: • Pregnant women • Patients with: ◦ New symptoms/stomach pain in those aged 50 years or older ◦ Severe symptoms ◦ Persistent symptoms

Treatment

Treatment depends on the severity and frequency of symptoms. Intermittent treatment and lifestyle and/or dietary modifications (Table II) may be sufficient for patients with infrequent episodes of heartburn (less than two episodes per week).

However, patients experiencing more frequent episodes (e.g. on two or more days per week) may require over-the-counter (OTC) medicine such as a proton pump inhibitor (PPI) or a histamine-2 receptor antagonist (H_2RA).

Table II: Lifestyle modification

Patients should be advised to: • Maintain a healthy weight; losing weight may help to reduce reflux in those who are overweight • Stop smoking • Avoid wearing tight or restrictive clothing • Raise the head of the bed by about 15–20 cm (especially for those experiencing night-time heartburn). Doing this would allow the head and shoulders to be higher than the stomach, thus allowing gravity to prevent acid from flowing back into the oesophagus and mouth • Try to relax and reduce stress
Reflux is more likely to occur soon after a large meal. To minimise the risk of reflux, patients should be advised to: • Consume smaller and more frequent meals • Avoid late meals and lying down soon after eating • Limit food or drinks that may trigger symptoms (such as excessive caffeine, alcohol, chocolates and fatty foods)

Antacids

Antacids contain ingredients such as aluminium hydroxide, magnesium trisilicate and/or calcium carbonate. They work by neutralising stomach acid. However, they do not prevent GORD.

Antacids typically start working quickly (within five minutes), but they only provide short-term relief of heartburn symptoms. Antacids should preferably be taken an hour after meals and again at bedtime.

Antacid combined with other agents

- Antacid-alginates

Alginates form a viscous gel that floats on the surface of the stomach contents that protects the stomach and oesophagus from stomach acid. Compared to antacids alone, antacid-alginates may provide longer symptom relief. Antacid-alginates are effective in controlling meal-induced symptoms.

- Antacids combined with other agents

Antacids are sometimes combined with a local anaesthetic (e.g., oxethazaine), an antifoaming agent (e.g., dimethicone or simethicone) or an antispasmodic (e.g., dicyclomine). However, the addition of an antifoaming agent or a local anaesthetic does not add to the efficacy of the antacid.

Points to consider

- Aluminium-based antacids tend to cause constipation.
- Magnesium-based antacids tend to have a laxative effect.
- Aluminium-magnesium combination may cause fewer bowel disturbances compared to single agents.
- Sodium-containing antacids should be avoided in pregnant women and in patients on a restricted sodium diet, for example, patient with high blood pressure.

H_2RAs

H_2RAs reduce the secretion of acid in the stomach by blocking the action of histamine on the histamine-2 receptors on the parietal cells in the stomach.

OTC H_2RAs (for example, cimetidine) are available for short-term (limited to 14 days) relief of heartburn, dyspepsia and hyperacidity. Although they take longer to start working than antacids, they are more effective in relieving heartburn and their effect lasts longer than that of antacids.

PPIs

PPIs reduce the amount of acid made by the stomach. They work by blocking the final step of acid production by inactivating the enzyme responsible for acid production (hydrogen-potassium ATPase pump) in the parietal cells in the stomach wall.

PPIs are the most potent inhibitors of gastric acid and are typically recognised as being the most effective medicine in reducing stomach acid. Compared to H_2RAs, PPIs have been found to be more effective in relieving heartburn and reflux. PPIs also provide faster symptom relief.

OTC PPIs (such as lansoprazole, omeprazole and pantoprazole) are approved for short-term (maximum duration of 14 days) relief of heartburn and hyperacidity. The different PPIs have comparable clinical efficacy and choice of product depends on cost, personal preference, the potential for interactions and side effects.

Better symptom control is achieved with continuous dosing (taking PPI daily for 14 days) compared to on-demand use. Patients who do not respond to two weeks of PPI treatment should be referred to a doctor.

Table III: OTC antacids, H_2RAs and PPIs

		OTC examples (include, but are not limited to)
OTC antacids	Aluminium hydroxide	Amphogel®
	Magnesium hydroxide	Phipp's Milk of Magnesia®
	Aluminium/magnesium combination	Adco-Mayogel®
	Calcium/magnesium combination	Digestif Rennie®
	Calcium carbonate	Eno chewable tablets®
	Antacid-alginate combination	Gelacid®, Gaviscon double action liquid®, Gaviscon peppermint tablets®
	Antacid with antiflatulents	Gelusil-S®
	Antacid with antispasmodics	Alumag D®
	Antacid with local anaesthetic	Mucaine®
H_2RA	Cimetidine	Lenamet OTC®
PPIs	Lansoprazole	Lansoloc OTC®, Roznal OTC®, Lancap OTC®
	Omeprazole	Rapacid®
	Pantoprazole	Pentoz OTC®, Peploc OTC®, Prazoloc OTC®, Topzole OTC®

In a nutshell

- Remember "safety first" – Identify and refer patients with "red flag" symptoms.
- Consider the frequency and severity (intensity) of symptoms as well as the degree to which they impact the quality of life and daily function before selecting treatment.
- Consider possible interactions if the patient is already using medication for other medical conditions, for example:
  - Antacids may alter the absorption of several other medications (such as antibiotics). To reduce the possibility of interference with other medication, antacids should be taken at least two hours before or after other oral medication.
  - Cimetidine has a high potential for drug interactions.
- Antacids or alginate-antacid may be used for occasional heartburn (occurring less than once a week). They may also be used for rapid symptom relief in patients experiencing breakthrough symptoms while taking an acid inhibitor.
- H_2RAs or PPIs may be considered for patients experiencing more frequent symptoms.
- OTC treatment with H_2RAs or PPIs is limited to 14 days to ensure that patient do not continue to self-medicate. If symptoms do not improve after 14 days of treatment or recur, the patient should be referred to the doctor.

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Just because you don't hear **mosquitoes buzzing** doesn't mean you are **safe**

Stephani Schmidt
Amayeza Information Services, South Africa

Introduction

Malaria is a risk for both travellers and local populations living in malaria areas. Malaria is caused by the *Plasmodium* parasite that is transmitted to humans through the bite of an infected female *Anopheles* mosquito. The parasite initially multiplies in the liver and then infects red blood cells. In some cases, the infection can progress to severe disease with serious or even fatal consequences if treatment is delayed.

In 2020, malaria caused illness in approximately 241 million people. The number of malaria deaths was estimated at 627 000 and 96% of these deaths occurred in Africa.

It is, however, important to remember that malaria is preventable. The key components of malaria prevention are:

- A = **A**wareness of the risk of acquiring malaria infection
- B = **B**ite prevention
- C = **C**hemoprophylaxis taken appropriately
- D = **D**etection/**D**iagnosis of malaria disease
- E = **E**ffective and **e**arly treatment

The 'A to E' of malaria prevention

Awareness

The risk of acquiring malaria varies according to the specific destination and even within a particular country. The risk may change from one year to the next and depends on changes in mosquito density, and prevalence of infection as well as local weather conditions (rainfall and temperature).

One of the first things to consider is the probability of being bitten by a potentially infected mosquito, which would depend on:

The destination

Malaria is prevalent in many tropical and subtropical countries in sub-Saharan Africa, Asia, Central and South America, and Oceania.

In South Africa, malaria transmission mainly occurs in the low altitude areas (below 1 000 m) in the north-eastern part of the country (Limpopo, Mpumalanga and northern KwaZulu-Natal provinces).[4] Occasionally, limited transmission may occur along the Molopo and Orange rivers in the North West and Northern Cape provinces. Please refer to the map in Figure 1.

Time of year

The risk of transmission is higher during or soon after the rainy season due to larger numbers of mosquitoes. In some countries, the risk of transmission is year-round. In South Africa, the risk of malaria is seasonal, with the highest risk during the wet summer months from September to May. Transmission is less during dry, winter months.

Type of accommodation

The likelihood of being bitten by mosquitoes is higher in rural areas compared to staying in an air-conditioned hotel in the city.

Length of stay

Longer stays in a malaria area are generally associated with a higher risk of contracting malaria. However, even spending a short period of time in an area with intense malaria transmission can result in infection.

Time of day

The risk is highest between dusk and dawn when malaria-carrying mosquitoes feed.

Mosquito bite prevention

The most important step in preventing malaria is to avoid being bitten by an infected mosquito. Just because you don't hear mosquitoes buzzing around doesn't mean you are safe – the

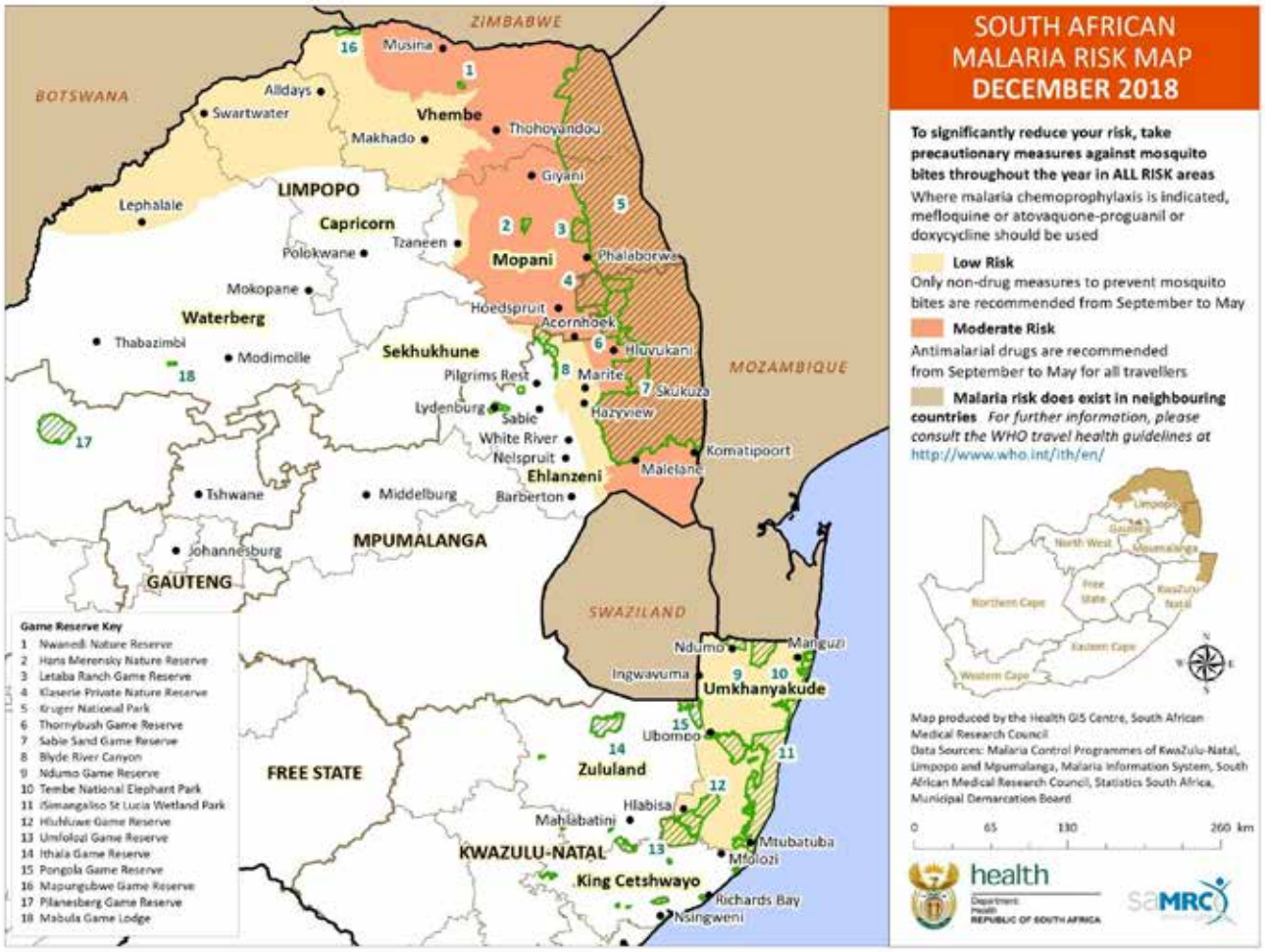

Figure 1: South African malaria risk map December 2018 from the National Institute for Communicable Diseases (NICD). Available from: https://www.nicd.ac.za/diseases-a-z-index/malaria/

malaria-carrying mosquitoes only make a "soft buzzing sound" and are often called the "silent killers".

Contact with mosquitoes between dusk and dawn can be reduced by:

- Covering doors and windows with anti-mosquito screens.
- Staying indoors, if possible.
- Using effective insecticides (mosquito mats, aerosol insecticide [for flying insects] and mosquito coils) in the living and sleeping areas at dusk after closing the windows.
- Using air conditioners and ceiling fans; they are effective because they hinder mosquitoes from landing and feeding.
- Treating bed nets with an insecticide registered for this purpose, e.g., a pyrethroid.
- Sleeping under mosquito nets (preferably insecticide-treated) that are not damaged; ensuring that nets are tucked in under the mattress and that baby cots and prams are covered.
- Wearing light-coloured clothing that covers most of the body (long-sleeved shirts, long trousers and socks) especially when going out at night. Malaria-carrying mosquitoes tend to bite below the waist and particularly below the knees.
- Applying an effective mosquito repellent such as those containing DEET (N, N-diethyl-3-methylbenzamide). A 30% DEET concentration is suitable for children > 2 months of age, and also for pregnant and breastfeeding women. Topical repellents should be applied:
  - To exposed parts of the skin. Do not spray directly onto face; spray on hands and then apply to the face. Avoid contact with eyes, eyelids, lips, damaged or irritated skin. Take care not to exceed the dose, especially for small children.
  - At regular intervals as recommended in the package insert (after four to six hours) and after bathing or showering.

Chemoprophylaxis

People at high risk of developing severe malaria complications such as children under five years of age, splenectomised patients, immunocompromised patients, and pregnant women should preferably avoid travelling to high-risk malaria areas.

In order to recommend the most suitable product, patients should be assessed individually, considering the age of the person, underlying medical conditions and current medication (to evaluate for the possibility of drug-drug interactions).

There are two over-the-counter (OTC) chemoprophylactic options available in pharmacies in South Africa, namely, atovaquone-proguanil (adult and paediatric formulation) and doxycycline (Table I). These products may be dispensed for the prevention of malaria, by a pharmacist, without a doctor's prescription.

Diagnosis and early treatment

The initial symptoms of malaria may be mild and mimic many other diseases such as influenza (flu) which makes it difficult to recognise malaria. Symptoms may appear as early as seven days after being

Table I: Over-the-counter products available for the prevention of malaria

Active ingredient		**Atovaquone-proguanil**		**Doxycycline**		
Retail name		Malagen®, Malanil®, Malateq®, Mozitec®		Doxycycline Biotech®		
Use in children		Not recommended for use in children under 11 kg		Contraindicated in children under eight years of age		
Dosing	Adults	One adult tablet daily		One capsule (100 mg) daily		
	Children	**Weight (kg)**	**Paediatric tablets**	**Age years**	**Weight kg**	**Dosage**
		11–20	1 daily	8–15	31–45	2 mg/kg
		21–30	2 daily	> 15	> 45	Adult dose
		31–40	3 daily			
		> 40	1 adult tablet daily			
Directions for use		Take once a day (at the same time each day); starting one day before entering the area Continue daily while in the area				
		Continue daily for seven days after leaving the area (after last exposure)		Continue daily for four weeks after leaving the area (after last exposure)		
Advice for patients		Take with food or milk for better absorption		Take after a meal with a full glass of water Do not lie down for at least an hour after taking doxycycline Avoid milk and dairy products for at least one hour before and two hours after taking doxycycline Avoid prolonged, direct exposure to the sun Apply an effective sunscreen with high SPF		
Common side effects (include, but are not limited to)		Headache, nausea and abdominal pain		Gastrointestinal upset (nausea or vomiting), oesophageal ulceration, candida infection of the gut and vagina (yeast infection), skin photosensitivity (sensitivity to sunlight)		

bitten by an infected mosquito (on average 10–21 days) and include fever, rigours with cold shivers and sweating, headache, muscle and/or joint pain, abdominal discomfort, diarrhoea, nausea, vomiting, weakness, fatigue, cough and a sore throat. However, symptoms may also appear a few months or more after being bitten.

Look out for fever in the returning traveller.

Although malaria chemoprophylaxis is effective in preventing malaria, it is also important to remember that chemoprophylaxis is not 100% effective. Travellers who develop fever or a flu-like illness within one week to six months after returning from a malaria area should seek medical care promptly as malaria could be fatal if treatment is delayed (even if malaria chemoprophylaxis has been taken).

In addition, malaria should be suspected in any person with unexplained fever or flu-like illness. Infected mosquitoes can be transported from a malaria area by air, road or rail and transmit the infection. This is known as odyssean malaria and is sometimes referred to as suitcase, airport, minibus, or taxi-rank malaria.

If malaria is suspected, the doctor will examine the blood for parasites using a blood test or a rapid malaria test. If results are negative, the test should be repeated until a diagnosis is confirmed or symptoms have resolved.

On the African continent, *P. falciparum* is the most prevalent malaria parasite. It is also the most dangerous type and is responsible for most malaria-related deaths globally. If not promptly diagnosed and treated appropriately, *P. falciparum* malaria can progress to severe illness (severe anaemia, lung, renal and liver failure, cerebral malaria with coma and/or convulsions) often leading to death in as little as 24-48 hours.

In a nutshell

- It is imperative that patients are educated on all aspects of malaria prevention. The key points are:
  - Avoid being bitten
  - Take malaria chemoprophylaxis as recommended by the pharmacist
  - Seek immediate medical care if flu-like symptoms appear after returning from a malaria area.

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Focus on **carbocisteine**

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Mucus is the first line of defence against harmful pathogens for various epithelia in the body. Mucus acts as a physical barrier against gastrointestinal and respiratory irritants and pathogens. It also contains proteins such as immunoglobulins, glycoproteins, and antimicrobial enzymes (such as lysozyme) that inhibit bacterial growth and biofilm production to protect against infection.[1]

Mucus production is regulated by two mechanisms: the mucus-secreting cells and the mucociliary escalator. In patients with chronic obstructive pulmonary disease (COPD) or asthma, chronic irritation of the airways can lead to mucus hypersecretion, which can overwhelm the mucociliary clearance mechanisms, resulting in excess mucus and the formation of mucus plugs that further reduce clearance. The airways then secrete an excess of inflammatory mediators to clear the obstruction, increasing the viscosity of mucus, resulting in a further decrease in clearance and initiation of inflammation and fibrosis. This cycle invariably results in infection of the static mucus and acute exacerbation of the condition.[1]

Mucolytic agents are used to manage mucus hypersecretion and its sequelae, such as recurrent infections in patients with COPD.[1] Carbocisteine is classified as a classic mucolytic[1] and is thought to reduce the viscosity of secretions by splitting disulphide bonds in mucoproteins.[2] Carbocisteine also increases the volume of sputum, producing an additional expectorative effect.[1] Administration of carbocisteine has been shown to improve sputum fluidity and normalise the bronchial epithelium.[3]

Indications

Carbocisteine is indicated as adjunctive therapy in respiratory tract disorders characterised by excessive viscous mucus in the absence of infection.[4]

Pharmacokinetics

Carbocisteine is rapidly and well absorbed following oral administration of 750 mg, with maximum concentration reached within 77 minutes for the syrup, 120 minutes for tablets and 130 minutes for capsules.[3] Carbocisteine was detected in the mucosa of the ear and paranasal sinuses of healthy subjects following a single dose of 2.7 g and penetrates well into the lung and bronchial secretions.[3,5]

Carbocisteine undergoes partial metabolism in the liver[1] with a diurnal variation resulting in different metabolites forming at different times of the day. Some evidence suggests that higher concentrations of active compounds are achieved with nocturnal administration.[1] Elimination half-life ranges between 90–120 minutes with the different dose forms, and between 30% and 60% of the drug is excreted unchanged in the urine.[1,5]

Dosing

Children (2–5 years)	62.5–125 mg three times daily
Children (5–12 years)	250 mg three times daily
Adults	750 mg three times daily, reducing to 375 mg four times daily when a satisfactory response has been obtained

Efficacy

In a systematic review and meta-analysis by Zeng et al. that included data from four studies involving 1 357 patients:[7]

- There was a decrease in the rate of total number of exacerbations with carbocisteine compared with placebo (-0.43; 95% confidence interval [CI] -0.57, -0.29, $p < 0.01$).
- Carbocisteine improved quality of life (-6.29; 95% CI -9.30, -3.27) and reduced the number of patients with at least one exacerbation (0.86; 95% CI 0.78, 0.95) compared with placebo.
- There was no significant difference in the FEV1 and adverse effects and hospitalisation rate.

The authors concluded that long-term use of carbocisteine (500 mg three times a day) may be associated with lower exacerbation rates, smaller number of patients with at least one exacerbation and higher quality of life for patients with COPD.[7]

A meta-analysis by Cazzola et al. demonstrated that mucolytic drugs effectively protect patients against COPD exacerbations. This beneficial effect was more significant in patients treated for one year or longer. Carbocisteine, erdosteine, and N-acetylcysteine administered at high doses (600 mg twice daily, corresponding to 1 200 mg/day) were the most effective agents.[8]

In the Chinese PEACE study, 709 patients with moderate-to-severe COPD were randomised in a double-blind trial to receive 500 mg carbocisteine (S-carboxymethyl cysteine) or placebo, three times a day for 12 months. Compared to placebo, patients on carbocisteine had a 0.34 mean reduction in exacerbations per patient per year (1.35 vs 1.01, respectively). As measured by the St. George's Respiratory Questionnaire, quality of life was also significantly improved at 12 months in patients taking carbocisteine.[9]

Following an observational, non-interventional, multicentre, cohort study in 501 patients with COPD who were administrated carbocisteine 375 mg (two capsules three times a day for five days, followed by one capsule four times a day for 10 days) and followed up during the next 15 days, carbocisteine was shown to be effective and well-tolerated and improved quality of life in these patients.[10]

Safety

Contraindications

Carbocisteine should not be administered to patients with active gastric ulceration.[4]

Special warnings and precautions for use

Caution is recommended in the elderly, those with a history of gastroduodenal ulcers, or those taking concomitant medications known to cause gastrointestinal bleeding. If gastrointestinal bleeding occurs, patients should discontinue the medication.[6]

Carbocisteine syrup contains sucrose that may affect glycaemic control in patients with diabetes mellitus. Patients with rare hereditary conditions such as fructose intolerance, glucose-galactose malabsorption or sucrase-isomaltase insufficiency should not take carbocisteine syrup.[4,6]

Adverse effects

Gastrointestinal discomfort, nausea, vomiting, diarrhoea, heartburn, gastric ulceration, and gastritis have been reported after the administration of carbocisteine.[3,4,6] Other side effects may include headache, dizziness, and palpitations.[4] Gastrointestinal bleeding, skin rash and fixed drug eruptions may occur rarely.[1,4]

Drug interactions

There are no known interactions with other medicinal products.[4,6]

Important prescribing points

- Mucolytics may be beneficial in selected cases with chronic, tenacious sputum production.
- Sufficient hydration is vital to reducing sputum viscosity.[2]
- Suppression of a productive cough is not recommended as this may cause mucus retention, promote stasis, and encourage the development of infection.[2]

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Insomnia: the unwelcome experience of difficulty **sleeping**

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Introduction

Insomnia is a common sleep disorder, categorised as difficulty in falling sleep, difficulty staying asleep, early wakening or feeling unsatisfied by sleep, despite adequate time and opportunity to sleep.

Adequate sleep is essential for good health and overall quality of life. It is an essential function that allows the body and mind to recharge, critical for the ability to think clearly, be vigilant and alert, and sustain attention. In fact, sleep has been proven to improve memory recall, regulate metabolism, and reduce mental fatigue.

In general, adults require between seven and nine hours of sleep every night. Studies have shown that a lack of or a disruption of sleep may affect immunity and increase the risk for disease. Modern lifestyles, such as busy work schedules, day-to-day stressors or a disruptive bedroom environment, can reduce the amount and the quality of sleep.

Symptoms of insomnia

Insomnia is associated with complaints of impaired daytime functioning, such as poor concentration, mood disturbance and daytime tiredness. People with insomnia may also complain of experiencing headaches, upset stomach, anxiety and depression. These symptoms may often affect work (absenteeism, poor work ability) and personal (social isolation) life.

Sleep disorders, such as insomnia, are classified by duration as transient (days), short-term (up to four weeks) or chronic (longer than four weeks). Patients with chronic insomnia should be referred to a doctor.

Possible causes of insomnia

- **Stress** from work, school, health, finances or family can keep the mind active at night, making it difficult to sleep. Stressful life events or trauma—such as the death or illness of a loved one, divorce, or a job loss, may also lead to insomnia.
- **Disruptive travel or work schedules** such as jet lag from travelling across multiple time zones, working a late or early shift, or frequently changing shifts can disrupt normal sleeping patterns.
- **Poor sleep habits** such as an irregular bedtime schedule, naps, stimulating activities before bed, an uncomfortable sleep environment, and using your bed for work, eating, or watching TV. Computers, TVs, video games, smartphones, or other screens just before bed can interfere with your sleep cycle.
- Certain **medications,** especially if they contain caffeine or other stimulants.
- **Substance abuse** or dependence on certain drugs, alcohol, nicotine, or caffeine.
- **Ageing** is associated with changes in sleep patterns, activity and health, all of which are linked to insomnia becoming more common as people age.

Treatment

The goal of treating insomnia includes improving the quality and amount of sleep, reducing distress and anxiety that occurs with insufficient sleep, as well as improving daytime functioning. A common approach to the management of insomnia involves a combination of cognitive behavioural therapy (CBT) and pharmacological treatment. In all patients, the cause/s of insomnia and possible coexisting disorders should be identified as part of the management strategy.

Non-pharmacological management

Cognitive behavioural therapy for insomnia (CBT-i) improves sleep outcomes with minimal adverse effects and is reportedly preferred

by patients over medicines. CBT-i involves sleep hygiene education, cognitive therapy, relaxation therapy, stimulus-control therapy and sleep restriction therapy.

Pharmacological management

The main goal of medication for insomnia is to improve sleep quality and duration while minimising abuse, misuse and addiction. The use of over-the-counter (OTC) medicines for insomnia should be considered after carefully reviewing the risks and benefits of treatment versus no treatment.

The choice of medicine should take into consideration symptom patterns, past treatment responses, patient preference, cost, comorbid conditions, potential drug interactions with concomitant medications and potential adverse effects.

Antihistamines: diphenhydramine, doxylamine

These are first-generation antihistamines that possess sedating properties and may be useful for those who find it difficult to fall asleep and/or who wake up often during the night. Patients treated with these antihistamines may experience anticholinergic side effects, such as dry mouth, urinary retention, constipation, dry mucous membranes, tachycardia, disorientation, dizziness and drowsiness.

Herbal medicines

Herbal medicines are often used to treat insomnia. However, their safety and efficacy for the treatment of this disorder remain uncertain. A review of mono-preparations containing valerian, chamomile, kava and wuling reported insufficient evidence to support their use for insomnia, despite their sedative properties, indicating a clear need for further research in this area.

The manufacturers' prescribing information regarding the use of an OTC product should be carefully read and observed. When using an OTC medication for insomnia, patients should always be advised to adhere to the recommended dosage, be made aware of the potential side effects, advised to avoid the use of alcohol, and avoid driving or operating machinery until their response to the treatment is known.

Table I: OTC medicines for the treatment of temporary insomnia

	Dosage
Diphenhydramine (e.g. Betasleep®)	**Adults and children > 12 years:** 1–2 capsules (50–100 mg) at bedtime, about 20 minutes before retiring
Diphenhydramine (e.g. Sleepeze-PM®)	**Adults and children > 12 years:** 1–2 tablets (25–50 mg) at bedtime Do not use continuously for more than five days
Doxylamine (e.g. Somnil®)	**Adults and children > 12 years:** 1–2 tablets (25–50 mg) at bedtime For occasional use only

Patient counselling and the role of the pharmacist assistant

'Sleep hygiene' refers to healthy habits, behaviours and environmental factors that influence sleep.

Key points for sleep hygiene

To do

- ✓ Establish fixed times for going to bed and waking up (and avoid sleeping in after a poor night's sleep)
- ✓ Maintain a comfortable sleeping environment: not too hot, cold, noisy or bright
- ✓ Using thick curtains or blinds, an eye mask and/or earplugs can help prevent being woken up by light and noise
- ✓ Create a relaxation period before going to bed: take a warm bath or listen to calming music

Avoid

- ✗ Watching TV or using phones, tablets or computers shortly before going to bed as light emission can stimulate the brain to stay awake
- ✗ Using the bedroom for watching television or talking on the phone as it may become associated with activity, rather than rest and sleep
- ✗ Exercise within four hours of bedtime (exercise earlier in the day may help promote sleep)
- ✗ Napping during the day
- ✗ Caffeine, nicotine and alcohol within six hours of going to bed
- ✗ Eating a heavy meal late at night
- ✗ Watching or checking the clock through the night as this can cause anxiety

When to refer the patient to the doctor

- Suspected depression, alcohol or substance-related dependency
- Insomnia of a chronic nature, i.e. longer than four weeks
- Insomnia in children under 16 years
- Patients who complain of restless legs or breathing issues during sleep

Conclusion

For most adults, at least seven hours of sleep each night is needed to help keep the body and mind healthy. Insomnia is the most common sleep disorder, characterised by an inability to fall asleep or to maintain sleep. Assisting patients with insomnia goes beyond the recommendation of an OTC medication. It is important to discuss healthy sleep habits to help promote adequate sleep and equally important to identify patients that require referral to the doctor.

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Don't feel the burn – sunburn prevention and treatment

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Introduction

Sunburn is the skin's reaction to too much exposure to ultraviolet (UV) radiation from the sun. Signs of a sunburn can start to appear in as little as 11 minutes and can continue to develop hours after exposure has ended and, depending on the severity, can take days or weeks to heal.

Excessive exposure to UV radiation can damage the skin and may cause skin cancer, including malignant melanoma. Each time the skin is exposed to UV radiation, it increases the risk of developing skin cancer.

Sunburn is classified according to the severity of the burn.

Sunburn classification

First-degree sunburn

This is what most people associate with sunburn. Redness, tenderness, and mild pain are all symptoms of a first-degree sunburn. Damage is only to the outer layer of the skin. These burns usually heal themselves within two to five days.

Second-degree sunburn

Second-degree sunburns cause damage past the first layer of the skin and involve the dermis. These burns are often very red, have blistering and swelling and more severe pain. Sometimes the burn also weeps fluid. Dehydration and nausea often accompany second-degree sunburns. These burns take longer to heal and may require treatment.

While most second-degree sunburns can be managed at home and with over-the-counter (OTC) medications, if the sunburn covers large areas of skin, it is advisable to seek medical attention to prevent infection and treat systemic symptoms.

Third-degree sunburn

These burns cause damage past the first layers of the skin and reach the fatty tissue underneath. Thankfully these sunburns are rare. The skin will present with a red to purplish discolouration and large blisters will form. Most people with third-degree sunburns also experience chills, a mild fever, nausea, headaches, and dehydration. The burn itself may not be painful because the nerve endings in the skin have been destroyed.

Treatment of sunburn

- As the skin continues to burn even after sun exposure has ended, it is important to cool the burn. Cooling down the burn will also help to treat the inflammation that occurs. Avoid using ice directly on the sunburnt area as it may cause even more damage to the skin. Cool, clean water or cold compresses work well.
- Stay out of the sun to avoid making the burn worse. Make sure to cover up and apply sunscreen when venturing outdoors after a sunburn.
- Anti-inflammatories like ibuprofen and naproxen are helpful to reduce pain and swelling. OTC 1% cortisone creams used sparingly will help to calm redness and swelling.
- Rehydration with plenty of cool fluids is important as a sunburn draws fluid to the skin's surface and away from the rest of the body. It is especially important if the patient shows signs of dehydration or sunstroke. Ensure that electrolytes are also replenished.
- Aloe vera gel is helpful for first-degree sunburns to ease pain and quicken recovery. Keeping the skin moisturised also aids in recovery.
- Do not pop any blisters that may form because the open wound on damaged skin can quickly result in infection. While the

blisters are intact, they protect the healing skin underneath and maintain a sterile environment for the damaged skin.

- Do not scratch or try to remove peeling skin as the skin underneath is sensitive and not yet able to produce as much ceramide – a waxy, fatty substance that acts like a natural barrier and is a form of protection for the skin.
- Third-degree burns require immediate medical attention.

Prevention of sunburns

One of the most effective ways to prevent sunburn is to use sunscreen correctly. There are a great many products available in different formulations and choosing the correct one is important.

- Choose a sunscreen with broad-spectrum protection – meaning it protects against both UVA and UVB rays. UVB rays are the main cause of sunburn, hyperpigmentation, and skin cancers, while UVA contributes to skin cancer and premature ageing.
- Choose a sunscreen that has a sun protection factor (SPF) of 30 or higher. The higher the SPF, the better protection it will offer against UVB rays.
- Choose a water-resistant formulation that stays effective on wet or sweaty skin, as both swimming and sweating can reduce the effectiveness of sunscreen. It is important to reapply sunscreen at least every 2 hours and even more often if spending time in water. A "very water-resistant" sunscreen can protect a person for up to 80 minutes of activity in water. Also, sunscreen is rubbed off when a towel is used to dry the skin. Sunscreen should be reapplied after every swim.
- Zinc- or titanium dioxide-containing sunscreens are suitable for sensitive skin and won't sting the eyes as the person sweats.
- Application of the sunscreen should occur at least 15–30 minutes before going outdoors to give it enough time to be absorbed by the skin and to form a protective film on the skin.
- Use enough sunscreen to properly cover all exposed skin. Remember the neck, ears, and tops of the feet, as these areas are often missed when applying sunscreen.

Other ways to prevent sunburn include:

- Staying out of the sun from 10 am to 3 pm as this is when the sun's rays are strongest.
- Using a broad-spectrum sunscreen even on cloudy days and checking the UV index when planning outdoor activities.
- Wearing a wide-brimmed hat that can protect the face and back of the neck.
- Wearing clothing that has an adequate ultraviolet protection factor (UPF) – many new fabrics offer high-tech protection and breathability too. Fabric with a UPF of 30 or more is recommended. Darker fabrics and more densely woven fabrics provide better protection than lighter, loosely woven fabrics. Remember, skin that is covered cannot burn.
- Some surfaces, like water, beach sand, and snow, reflect the sun's rays and can cause sunburn even when the person is in the shade, so always use sunscreen.

Dark skin and light skin respond differently to the sun's ultraviolet rays. Even though dark skin is less likely to burn as it contains higher levels of melanin, which aids in protecting the skin against the effects of UV light on the skin's surface, it can still develop sun damage. Regardless of a person's skin tone, everyone should use sun protection to prevent skin damage.

Conclusion

Although it may seem like a temporary condition, the long-term effects of repeated bouts of sunburn can cause long-lasting damage to the skin. Not only does this damage cause premature wrinkling and ageing of the skin, but this damage also increases a person's risk of getting skin cancer, including melanoma, making it critical to protect the skin from the sun.

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Nutritional **supplements** during **pregnancy** and **lactation**

Roslynn van Schoor

Introduction

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

Nutrition and pregnancy

Good dietary practices are important during all stages of life, but especially in women of reproductive age. Nutritional requirements for pregnant women differ significantly from those of non-pregnant women. This is due to the physiological changes that occur during pregnancy, such as weight gain, hormonal shifts and the development of milk ducts and alveoli in breast tissue. Adequate nutrition is needed to support foetal growth and development. Many women do not meet recommended nutritional requirements at conception and throughout pregnancy. This is mainly due to poor eating habits. Dietary intake may also be affected by gastrointestinal issues such as vomiting, constipation and reflux (common during pregnancy). Adopting a varied diet is the best way to meet nutrient requirements. A healthy diet should include whole grains, fruit, vegetables, legumes, nuts/seeds, low-fat dairy, healthy fats, and lean meat/meat replacements. Women of reproductive age should maintain a healthy body weight and follow good lifestyle habits before and during pregnancy. Routine multivitamins and mineral supplements may be needed to achieve an optimal nutrition status before contemplating pregnancy and during pregnancy.

Nutrition and lactation

Energy and nutrient requirements remain high during lactation. The fat-soluble vitamins (A, D, E and K), as well as the water-soluble vitamins (C, B1, B6, B12 and folate), are secreted in breastmilk. If a mother's intake of these nutrients is low, it will affect the nutrient content of her breastmilk. Following a nutritious diet and consuming prenatal supplements is advised during lactation.

Macronutrient requirements

Macronutrients (carbohydrates, protein, and fat) are calorie-containing compounds that provide the body with energy. A balanced diet should consist of 45–65% carbohydrates, 10–35% protein and 20–35% fat. Pregnant women are advised to avoid diets that restrict entire food groups, e.g., ketogenic/paleo diet. In cases of malnutrition or underweight, a nutritional supplement containing carbohydrates, fat and protein may be useful.

Omega-3 requirements

Omega-3s are polyunsaturated fatty acids (PUFAs) which are essential for foetal brain development and cellular function. After birth, omega-3s are provided to infants through their mother's breastmilk. The two main types of omega-3s are eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Omega-3s are found in foods like fatty fish, chia seeds, flaxseeds, and walnuts. Fish oil or omega-3 supplements are recommended during pregnancy as they may decrease the risk of pre-term birth. Supplementation during lactation is also beneficial to growing infants.

Micronutrient requirements

Micronutrients (vitamins and minerals) are substances required by the body in relatively small amounts. Each nutrient has a role to play in maintaining overall health and ensuring a healthy pregnancy. The most important micronutrients during pregnancy include iron, folic acid, vitamin B12, zinc, vitamin D, selenium, and calcium.

Iron

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

Folate

Folate (vitamin B9) plays a role in DNA replication and cell division. Deficiency of this nutrient may cause babies to be born with neural tube defects such as spina bifida and anencephaly. Folate is naturally found in dark green, leafy vegetables, legumes, whole grains, and peanuts. Folate requirements increase significantly during pregnancy (400 µg to 600 µg daily). Pregnant women should take additional folic acid (the manufactured form of folate) to meet these requirements. Lactating women also have higher folate requirements (500 µg) and would benefit from a supplement. Women of reproductive age are advised to take folic acid before getting pregnant to avoid deficiency at the time of conception.

Vitamin B12

Vitamin B12 is required for red blood cell and DNA production. This nutrient is found naturally in meat, eggs, dairy and fortified cereal. Vitamin B12 deficiency may cause maternal anaemia and affect foetal brain development. Vitamin B12 requirements are slightly higher in pregnancy and lactation (2.6 µg and 2.8 µg daily, respectively). Vitamin B12 supplementation may be beneficial during pregnancy. Women following restrictive diets such as veganism and vegetarianism should take a vitamin B12 supplement, as this nutrient is predominantly found in animal products.

Zinc

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

Vitamin D

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

Selenium

Selenium requirements increase slightly from 55 µg to 60 µg/day during pregnancy. Selenium is found naturally in seafood, meat, and certain nuts. Selenium deficiency is associated with impaired immune and nerve development of the foetus. Furthermore, a lack of selenium increases the risk of miscarriage. Supplementation may be needed during pregnancy.

Calcium

Calcium is needed throughout pregnancy, especially during the last trimester when the baby's skeleton is rapidly developing. Calcium is also essential for adequate breastmilk production and may help treat leg cramping during pregnancy. Calcium requirements increase to up to 1 200 mg/day during pregnancy and lactation. Supplementation is advised for pregnant and breastfeeding women.

Supplements

There are multiple prenatal supplements available on the shelves. Many of these products include up to three different tablets/capsules that need to be consumed every day. Women of reproductive age are advised to follow a nutritious diet to meet requirements, but supplements may be needed to prevent deficiency. Some women

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

	Iron	Folic acid	B12	Zinc	Vitamin D	Selenium	Calcium	Omega 3 (DHA)
Supplement								
Clicks Pregnancy Supplement with omega-3, calcium and magnesium	✓	✓	✓	✓	✓	-	✓	✓
PregOmega	✓	✓	✓	✓	✓	-	✓	✓
PregOmega Plus	✓	✓	✓	✓	✓	-	✓	✓
Stellar Mama	✓	✓	✓	✓	✓	✓	✓	✓
Preggy Mama	✓	✓	✓	✓	✓	✓	✓	-
Chela-Preg (1&2)	-	-	-	✓	-	✓	✓	-
Chela-Preg multivitamin	✓	✓	✓	✓	✓	-	✓	-

are more vulnerable to deficiency than others. Those following restrictive diets, teenagers, and mothers with pre-existing health issues/deficiencies may require supplementation. Underweight or malnourished women may benefit from a nutritional supplement containing protein, carbohydrates, and healthy fats (e.g., *Similac Mom*). Although supplements may be beneficial, overdosing or taking multiple supplements at once may have adverse effects and negatively affect pregnancy outcome. Prospective mothers are advised to adhere to the prescribed supplement regimen before, during and after pregnancy. Examples of prenatal supplements are highlighted in Table I.

Conclusion

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

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Traveller's diarrhoea

Sumari Davis
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Introduction

Traveller's diarrhoea is the most predictable travel-related illness and can affect up to 70% of travellers, depending on the destination and season of travel. Although it usually resolves by itself, it can lead to dehydration and, in severe cases, significant complications.

What is traveller's diarrhoea?

Traveller's diarrhoea is defined as three or more loose stools in a 24-hour period and typically occurs 4–14 days after arrival in a resource-limited destination. Traveller's diarrhoea is caused by a change in diet or eating food or drinking water that is contaminated, most commonly by bacteria (mostly *E. coli*), but also sometimes by viruses or parasites.

Symptoms

The main symptom of traveller's diarrhoea is runny or watery bowel movements, but the following symptoms may also be present:

- An urgent, frequent need to defaecate
- Gas and bloating
- Abdominal cramps
- Nausea and vomiting
- Loss of appetite
- Feeling weak or tired
- Fever

Symptoms usually improve in one to two days, and resolve within three to seven days, but some patients may be sick for a week or longer. In some cases, patients may need to see a doctor and that includes people with any of the following symptoms:

- Diarrhoea lasting for longer than three to four days
- More than six loose stools in 24 hours
- High fever (38.5 °C or higher)
- Black or bloody stools
- Persistent vomiting
- Severe pain in the abdomen or rectum
- Dehydration (dry mouth, decreased volumes of dark urine)
- Patients older than 65 years
- Patients with other medical conditions or a weakened immune system

Risk factors and prevention

Travelling to the following areas may increase the risk of developing traveller's diarrhoea:

- Asia (especially South and Southeast Asia)
- Developing countries in Africa
- South America, Central America, Caribbean Islands and Mexico
- Countries around the Mediterranean Sea, including Israel
- Middle East

Poor food hygiene practices during food storage (including lack of refrigeration), preparation and handling increase the risk of traveller's diarrhoea. Patients using proton pump inhibitors or who recently used antibiotics are also at higher risk of contracting traveller's diarrhoea, whilst pregnant women, diabetic patients, young or old patients, immunocompromised patients and those with underlying chronic kidney, liver, heart, or gastrointestinal diseases are at increased risk of severe disease.

It is possible to reduce the risk of contracting traveller's diarrhoea if travellers adhere to the following helpful measures:

- Wash hands often, or use alcohol-based sanitiser, especially before eating
- Avoid using tap water, rather consume bottled water
- Avoid drinks with ice cubes that might be made from tap water
- Use bottled water for teeth brushing

- Do not swallow shower water
- Avoid swimming in contaminated water
- Avoid drinking water from lakes and rivers
- Drinks from unopened cans or bottles, hot coffee or tea, beer and wine are considered safe
- Stick to foods and drinks that are well-cooked and served hot
- Only eat fresh produce if you can peel it yourself
- Avoid unpasteurised milk and dairy products
- Avoid raw meat, poultry, eggs, and shellfish

In short, travellers should be extremely careful about what they consume and "boil it, cook it, peel it or forget it". However, even if careful, patients may still contract traveller's diarrhoea, sometimes even more than once in a trip, and would then need to know how to manage it.

Treatment

First and foremost, patients need to ensure that they stay hydrated. This means taking in plenty of fluids with salt and sugar and may include fluids like soup or broth with salted crackers or water mixed with juice. Alternatively, commercial oral rehydration products are convenient to use when travelling (Table I). If food can be tolerated, it is better to stick to boiled starches such as potatoes, noodles, rice, wheat, and oats. The BRAT diet is often recommended for diarrhoea: bananas, rice, apple sauce, and toast.

Table I: Products available over-the-counter for management of traveller's diarrhoea

Function	Active ingredient	Some products available in South Africa
Rehydration	Electrolytes	Electropak® Hydrol® Nudrate® Rehidrat® Scriptolyte®
Intestinal adsorbents	Diosmectite	Diaclin® Smecta®
	Kaolin and pectin	Gastropect® Pectikon®
Restore GI flora	Probiotics	Combi® 15 Entiro® Kiddieforte® Probiflora® Reuterina®
Decrease number of stools	Loperamide	Imodium® tablets and syrup Gastron® tablets and syrup Loperastat® syrup
	Diphenoxylate/ Atropine sulphate	Lomotil®

*Always refer to the relevant package insert for recommended use, dosage, and safety warnings.

Oral rehydration solutions should be discarded after 12 hours (if kept at room temperature) or after 24 hours if refrigerated.

Patients can also make their own rehydration solution by boiling 1 litre of water vigorously and then allowing it to cool. Add half a teaspoon of salt and six teaspoons of sugar to the water. Patients should drink as much as possible of an oral rehydration solution but as a guide, infants and patients up to two years should take a quarter to half a cup of the solution after each loose stool and patients older than two years need half to one cup after each loose stool. The solution should be administered as frequent small sips.

Loperamide and diphenoxylate/atropine can reduce the frequency of stools but can result in constipation. These drugs should preferably not be used by patients younger than six years of age. Patients with a high fever or blood in their stools should also not use these medicines without consulting a doctor. If no effect is seen within 48 hours, loperamide treatment should be stopped and the patient should see a doctor.

Conclusion

Although traveller's diarrhoea can hamper travel plans, most cases can be managed and will usually resolve within three to four days. It is best to prevent episodes by maintaining high levels of food hygiene and to "boil it, cook it, peel it, or forget it". If diarrhoea does develop, it is most important to rehydrate and, in moderate cases, addition of medication may reduce the frequency of stools. Patients with severe pain, black or bloody stools, fever, or other concomitant conditions, may need to see a doctor in order to prevent severe complications.

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Bladder infections in women

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Introduction

Urinary tract infections (UTIs) include cystitis (infection of the bladder) and pyelonephritis (infection of the kidney). Cystitis is common among women, particularly during their reproductive years. About 50% of all women will experience at least one episode of cystitis in their lifetimes. Some women may also have recurring bouts of cystitis.

Causes of bladder infections in women

Bacteria that cause UTIs do not generally live in the urinary tract but in the gastrointestinal tract and close to the urethra (the tube that transports urine from the bladder to outside the body) in women. Bladder infections occur when bacteria enter the urethra and travel into the bladder. *Escherichia coli (E. coli)* is the most common bacterial cause of community-acquired UTIs in South Africa, responsible for about 72% of cases. *Klebsiella pneumoniae* is responsible for about 9% of community-acquired UTIs.

UTIs are more common in women because their urethra is shorter than men's, and the anus and urethra are closer together, resulting in a higher likelihood of exposure to bacteria. Other factors that increase a woman's risk of developing a UTI include:

- Sexual intercourse – which promotes the migration of bacteria into the bladder. Passing urine straight after intercourse appears to reduce the risk of developing a bladder infection. This is because emptying the bladder flushes the bacteria out of the urethra.
- Having a bladder or kidney infection in the last 12 months
- Having a mother with a history of UTI or a history of UTI in childhood
- Having diabetes
- Using a spermicide for contraception

Symptoms of bladder infections

When bacteria invade the bladder wall, an inflammatory reaction called cystitis occurs. The onset of symptoms is usually sudden. The typical symptoms of a bladder infection include:

- Pain or burning when urinating
- Frequent need to urinate, although only a small amount of urine may be passed each time
- Urgent need to urinate
- Discomfort in the lower abdomen
- Blood in the urine
- Urine may appear cloudy to the naked eye

Table I: OTC medicines for the treatment of symptoms of bladder infections

Symptom	OTC treatment
Pain	Paracetamol (e.g. Panado®) 500–1 000 mg every 4–6 hours as needed for up to 2 days. Do not exceed 4 g in 24 hours. OR Ibuprofen (e.g. Nurofen®) 200–400 mg three times a day for up to 2 days. Do not exceed 1 200 mg in 24 hours.
Urgency and frequency	A urinary antispasmodic such as flavoxate (e.g. Urispas®) 200 mg 3–4 times daily.
Pain when passing urine	Products that make the urine more alkaline may provide relief of symptoms. These products, called urinary alkalinisers, may be helpful in relieving pain when passing urine. The urine may be made more alkaline by: • Drinking 500 ml of water to which a teaspoon of bicarbonate of soda has been added OR • Using commercial urinary alkalinisers that contain ingredients such as sodium citrate, citric acid, sodium bicarbonate, tartaric acid (e.g. Citro-Soda® or Effersol®) Note: Some antibiotics work best if the urine is acidic. Therefore, a urinary alkaliniser should not be used in patients taking these antibiotics. Check with the pharmacist before recommending a urinary alkaliniser in a patient taking an antibiotic for a bladder infection.

Table II: Behaviour changes and complementary remedies to consider for women with recurrent bladder infections

Behaviour changes	Complementary treatments
• Drink more fluids, preferably water, e.g. 2–3 litres per day in total • Pass urine after sexual intercourse • Wipe from front to back after passing a stool • Avoid douching • Avoid wearing occlusive underwear • Shower rather than bathing and avoid the use of perfumed bath products	**Probiotics** • Lactobacilli, e.g. products that contain *L. rhamnosus* GR-1, *L. reuteri* B-34, *L. reuteri* RC-14, (e.g. Reuterina® Femme) *L. casei Shirota,* and *L. crispatus* CTV-05
	Cranberry products • A minimum of 36 mg per day of proanthocyanidin A (the active ingredient) or 300–400 mg twice daily in tablet form or 300 ml of a ≥ 30% cranberry juice blend three times daily
	Canephron® tablets • Contain centaury, lovage and rosemary – the recommended dose is two tablets three times daily for adults

Burning with urination can also occur in women with a vaginal infection, such as a yeast infection. In women who present with symptoms of painful urination, the presence of vaginal discharge or odour, itching or painful sexual intercourse suggests another cause for the symptoms, such as a vaginal yeast infection.

Symptoms of a bladder infection can be subtle in older women. Older women may have persistent symptoms of painful urination or urinary incontinence, and not have a UTI. A bladder infection may not cause any symptoms in the older woman and is discovered when urine tests are done for other reasons. Doctors usually test the patient's urine to confirm the diagnosis of UTI. The pharmacist is permitted to carry out urine dipstick analysis in the pharmacy under certain conditions specified by the South African Pharmacy Council.

Usually, patients with a bladder infection do not have fever, chills, nausea, vomiting, or back pain. These are signs of a kidney infection and mean that the patient should be referred to the doctor as soon as possible.

Bladder infection treatment

While mild bladder infections usually clear up within a few days without the need for antibiotic treatment, the usual treatment for a bladder infection in women includes a course of antibiotics. Appropriate antibiotic treatment should improve symptoms within one day after starting treatment and can shorten the duration of the bladder infection by 1–2 days. If symptoms persist for more than two or three days after starting treatment or if they worsen, patients should be advised to contact the doctor.

Patients should also be reminded to take the complete course of the antibiotic to eliminate the infection. Stopping the antibiotic too soon may increase the chance of the infection returning and the bacteria becoming resistant to that antibiotic.

Over-the-counter (OTC) medicines may be used to treat symptoms of bladder infections in women. Such medicines may be recommended when the symptoms are mild or for use until the patient can consult her doctor (Table I). If symptoms of a mild bladder infection have not resolved within 2–3 days, the patient should be referred to the doctor.

Non-pharmacological approaches to managing symptoms of mild bladder infections include:

- Increasing water intake to a large glass of water every half hour. It is beneficial to get the urine flowing to help flush out the bladder.
- Not delaying urination. Tell patients to urinate as often as the need arises. Also, it is important to empty the bladder completely when urinating.

Preventing bladder infections

An estimated 20–40 % of women who have had one previous bladder infection are likely to experience an additional episode. Recurrent bladder infections are usually treated in the same way as the initial infection unless the infection is known or thought to be caused by resistant bacteria.

Although behaviour changes to prevent recurrent bladder infections have not been adequately tested in studies, it is reasonable to inform patients about these approaches as a way of reducing the need for an antibiotic. In addition, some complementary treatments may be considered for patients with recurrent bladder infections (Table II). Women with frequent bladder infections may need to take low-dose antibiotics continually to prevent recurrent infections.

Conclusion

Bladder infections remain one of the most common indications for prescribing antibiotics in otherwise healthy women living in the community. Mild bladder infections usually clear up within a few days without antibiotic treatment. However, appropriate antibiotic therapy should improve symptoms within one day after starting treatment and can shorten the duration of the bladder infection by 1–2 days.

OTC medicines may be used to treat symptoms of bladder infections in women. Such medicines may be recommended when the symptoms are mild or for use until the patient can consult her doctor. In addition, some complementary treatments available OTC may be considered for patients with recurrent bladder infections.

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Diarrhoea in infants requires urgent attention

Diarrhoea remains one of the leading causes of death, ill health and disability among children under five years of age in developing countries,[1] accounting for 19% of deaths of under-fives in South Africa and for 46% on the African continent.[1] Globally, diarrhoea is the second leading infectious cause of death, accounting for 9.2% of deaths in under-fives.[1]

The high incidence of malnutrition in South Africa[2] adds to this toll. The relationship between diarrhoea and malnutrition is bidirectional: diarrhoea may lead to malnutrition, while malnutrition may aggravate the course of diarrhoea.[3] Diarrhoea is more common and more severe in children with malnutrition (i.e. undernutrition), and malnourished children often have persistent or repeated diarrhoea.[4] In addition, malnourished children are more likely to develop severe diarrhoea and die from it.[4] Vulnerable groups such as pregnant women and children under five years of age are the most affected by malnutrition, especially in rural areas.[5]

Identifying children at risk

The Centres for Disease Control advises that caregivers should be trained to recognise signs of illness or treatment failure that necessitate medical intervention.[6] Infants with acute diarrhoea are more prone to becoming dehydrated than older children,[6] and healthcare workers or parents of infants with diarrhoea should promptly seek medical evaluation as soon as the child appears to be in distress. Reports of changing mental status in the child are of particular concern.[6]

When the child's condition is in doubt, immediate evaluation by a healthcare professional is recommended.[6] Clinical examination of the child provides an opportunity for physical assessment, including vital signs, degree of dehydration, and a more detailed history, and for providing better instructions to the caregivers.[6]

Treatment

The treatment emphasis for acute diarrhoea in children is the prevention and management of dehydration, electrolyte abnormalities and comorbid conditions.[3] The objectives of diarrhoeal disease management are to prevent weight loss, encourage catch-up growth during recovery, shorten the duration and decrease the impact of the diarrhoea on the child's health.[3]

A number of studies have shown that probiotics shorten the duration of diarrhoea and prevent recurrence of other episodes.[7] Furthermore, probiotics can prevent diarrhoea from infection in infants with malnutrition.[7]

Momeena Omarjee, Consumer Healthcare Country Head: Scientific Affairs, at Sanofi South Africa says: "Good gut health is crucial for one's wellbeing - and healthcare professionals should encourage parents to give children a daily, regular probiotic which could go a long way in preventing diarrhoea and illness."

How can the risk of diarrhoea be reduced?

Breastfeeding, a clean safe water supply, appropriate hand-washing and good sanitation will prevent most cases of diarrhoea.[8]

Research shows that diarrhoea is closely linked to socioeconomic status and has the most adverse effects in South Africa's impoverished communities.[9] South African children living in poverty are approximately 10 times more likely to die from diarrhoea than their more privileged counterparts.[9]

Says Omarjee: "Many of these underprivileged children in South Africa do not have adequate access to clean, potable water and quality early childcare and development, and they experience limited access to health and nutrition services. KwaZulu-Natal (KZN), for example, is experiencing outbreaks of diarrhoea and other water-borne diseases due to the recent floods."

Although government and NGOs have been working tirelessly to distribute clean, potable water to affected areas in the province, many communities continue to face challenges and intervention is needed to not only provide clean water to the communities, but also to manage the high risk of diarrhoea and related water-borne diseases.

"Sanofi has therefore embarked on an ambitious campaign, in partnership with a non-profit organisation, Save the Children South Africa, from October 2022 to assist these areas in need, and to impact over 2 000 000 lives through hygiene education and access to water," says Omarjee.

Sanofi, working together with Save the Children South Africa, will donate water tanks to Early Childhood Care and Development (ECCD) centres in the communities identified, based on Save the Children's baseline assessment, and will ensure access to clean, potable water.

The provision of information, counselling, education and support to children and their caregivers is also limited, which translates into low use of services and uptake of practices promoting good health. Education campaigns on healthy hygiene habits will be rolled out to children and their caregivers and will be run through the Child Health Awareness Days (CHAD) events, training of ECCD centres practitioners, and community health workers.

Sanofi is committed to ensuring that no child dies of a preventable disease, especially when there are effective treatments available. Says Omarjee: "Healthcare professionals need to encourage parents and caregivers to act promptly and seek assistance when instances of diarrhoea in children under age five do not abate swiftly."

References available on request

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