

Introduction

Pharmacy practice is the discipline of pharmacy which involves developing the professional roles of pharmacists.

Pharmacy practice can refer to several fields of pharmaceutical profession such:

- Hospital pharmacy
- Community pharmacy
- Clinical pharmacy

In addition to many fields such as compounding pharmacy, pharmacy informatics, internet pharmacy... etc.

Community pharmacists are the most accessible healthcare professional. No appointment is needed to consult a pharmacist and patients can receive free, unbiased advice almost anywhere.

A community pharmacist is often the first health professional the patient seeks advice from and, as such, provides a filtering mechanism whereby minor self-limiting conditions can be appropriately treated with the correct medication and patients with more sinister pathology referred on to the GP for further investigation.

On a typical day a pharmacist practicing in an 'average' community pharmacy can realistically expect to help several patients a day who present with various symptoms for which they are seeking advice, reassurance, treatment or a combination of all three.

Current health policy in the Western countries of making more medicines available has promoted patient self-care, and with it a greater role for community pharmacists. The over-the-counter (OTC) medicines market has seen considerable growth over the last few years.



The role of the pharmacist

The consultancy agreed that contemporary and future pharmacists must possess specific knowledge attitudes, skills and behaviors in support of their roles.

WHO summarized these roles in "*the seven-star pharmacist:*"

❖ Care-giver

The pharmacist provides caring services. Whether these services are clinical, analytical, technological or regulatory, the pharmacist must be comfortable interacting with individuals and populations. The pharmacist must view his or her practice as integrated and continuous with those of the health care system and other pharmacists. Services must be of the highest quality.

❖ Decision-maker

The appropriate, efficacious and cost effective use of resources (e.g., personnel, medicines, chemicals, equipment, procedures, practices) should be at the foundation of the pharmacist's work. Achieving this goal requires the ability to evaluate, synthesize and decide upon the most appropriate course of action.

❖ Communicator

The pharmacist is in an ideal position between physician and patient. As such, he or she must be knowledgeable and confident while interacting with other health professionals and the public. Communication involves verbal, non-verbal, listening and writing skills.

❖ Leader

Whether the pharmacist finds him/herself in multidisciplinary (e.g., team) caring situations or in areas where other health care providers are in short supply or non-existent, he/she is obligated to assume a leadership position in the overall welfare of the community. Leadership involves compassion and empathy as well as the ability to make decisions, communicate, and manage effectively.

❖ Manager

The pharmacist must effectively manage resources (human, physical and fiscal) and information; he or she must also be comfortable being managed by others, whether an employer or the manager/leader of a health care team. More and more, information and its related technology will provide challenges to the pharmacist as he/she assumes greater responsibility for sharing information about medicines and related products.

❖ **Life-long-learner**

It is no longer possible to learn all one must learn in school in order to practice a career as a pharmacist. The concepts, principles and commitment to life-long learning must begin while attending pharmacy school and must be supported throughout the pharmacist's career. Pharmacists should learn how to learn.

❖ **Teacher**

The pharmacist has a responsibility to assist with the education and training of future generations of pharmacists. Participating as a teacher not only imparts knowledge to others, it offers an opportunity for the practitioner to gain new knowledge and to fine-tune existing skills.

An addendum to the seven-star pharmacist concept has resulted in the inclusion of two new criteria, thereby giving rise to the 'Nine-star pharmacist'. In addition to the seven roles, the inclusion of pharmacist as a researcher and an entrepreneur is quite significant.

❖ **Researcher**

Research is not just for academicians. A great deal of research takes place at grass roots level. Research findings can impact on all sectors of the pharmacy profession. A culture change is needed whereby pharmacists see research as a core part of their normal daily practice. There is a need for more practice research to help the profession meet its aspirations. Pharmacists need help and advice about how to get involved.

❖ **Pharmapreneur or entrepreneur**

An entrepreneur is 'a person who organizes and operates a business or businesses, taking on greater than normal financial risks in order to do so'. Entrepreneurs are usually viewed as individuals who take substantial risks to go out and start new companies.

The concept of 'Pharmapreneur' is still in its infancy because unfortunately, the mindset of almost all fully-registered pharmacists (and pharmacy graduates) is that their profession extends to only drug dispensing and its associated activities within a hospital or clinical setting. Most pharmacists go to work for entities that are already established, such as a community pharmacy or hospital. Such positions are generally considered safe, as they promise a steady paycheck and continued employment. For that reason, entrepreneurship is not commonly listed among a pharmacist's skill sets.

Drug Regulations

In UK, drugs are classified into:

- Prescription-only medicines (POM), which may be sold by a pharmacist if they are prescribed by a prescriber
- Pharmacy medicines (P), which may be sold by a pharmacist without a prescription
- General sales list (GSL) medicines, which may be sold without a prescription in any shop

In the USA, FDA requires OTC products to be labeled with an approved "Drug Facts" label to educate consumers about their medications.

Responding to a request for help

The following steps are required to help any person:

- Information gathering
- Decision making
- Treatment
- Outcome

Approaches to differential diagnosis

A *mnemonic* or an *acronym* is sometimes used by pharmacists to gather information to help them in diagnosing a patient's presenting complaint. Caution should be exercised when using a mnemonic or acronym due to the fact that it may fail to obtain all necessary information that is needed before diagnosing the patient's presenting complaint accurately and further questioning may be necessary depending on the patient's response to questions.

WWHAM

W	Who is the patient
W	What are the symptoms
H	How long have the symptoms been present
A	Action taken
M	Medication being taken

ASMETHOD

A	Age/appearance
S	Self or someone else
M	Medication
E	Extra medicines
T	Time persisting
H	History
O	Other symptoms
D	Danger symptoms

ENCORE

E	Explore
N	No medication
C	Care
O	Observe
R	Refer
E	Explain

SIT DOWN SIR

S	Site or location of a sign/symptom
I	Intensity or severity
T	Type or nature
D	Duration
O	Onset
W	With (other symptoms)
N	Annoyed or aggravated by
S	Spread or radiation
I	Incidence or frequency
R	Relieved by

Nausea and vomiting

- Nausea is an unpleasant sensation, which may be a precursor to the forceful expulsion of gastric contents (vomiting).
- Nausea is defined as the feeling of a need to vomit and vomiting as the expulsion of gastric contents via abdominal and chest wall contractions.
- Nausea and vomiting are symptoms of other conditions especially gastrointestinal conditions. Most cases have a gastrointestinal origin, with viral gastroenteritis and food poisoning being the most common acute cause in all age groups.
- Infections, acute alcohol ingestion, anxiety, severe pain, labyrinth and cardiovascular causes can also produce nausea and vomiting. Therefore, their prevalence and epidemiology within the population are determined by that condition.

What you need to know?

<ul style="list-style-type: none">• Age of the patient• Pregnant?• Duration of symptoms• Prescribed and OTC medications• Previous medical history• Alcohol intake?	<ul style="list-style-type: none">• Associated symptoms<ul style="list-style-type: none">• Has vomiting started• Abdominal pain• Diarrhea• Constipation• Fever• Alcohol intake• Dizziness/vertigo
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Presence of abdominal pain

Certain abdominal conditions, e.g. appendicitis, cholecystitis and cholelithiasis, can also cause nausea and vomiting. However, for all three conditions abdominal pain would be the presenting symptom and not nausea and vomiting. The severity of the pain alone would trigger referral.

Timing of nausea and vomiting

- Early morning vomiting is often associated with pregnancy and excess alcohol intake.
- If vomiting occurs immediately after food this suggests gastritis and if vomiting begins after 1 hour or more after eating food then peptic ulcers are possible.

Signs of infection

- Acute cases of gastroenteritis will normally have other associated symptoms such as diarrhea, fever and abdominal discomfort.
- If infection is due to food contamination, then other people are often affected at the same time.
- Other infection, such as otitis media, may cause nausea and vomiting.

Pregnancy

Nausea and vomiting are common in pregnancy. Sickness tends to be worse in the first trimester and in the early morning.

Nausea and vomiting in pediatric patients

- Vomiting in neonates should always be referred because it suggests a congenital disorder, for example Hirschsprung's disease.
- In the first year of life the most common causes of nausea and vomiting are feeding problems, gastrointestinal and urinary tract infection. Vomiting in infants needs to be differentiated from ***regurgitation***.
- Children under 12 years who experience nausea and vomiting will usually have gastroenteritis, fever or otitis media. In most instances the conditions are self-limiting and medication designed to reduce pain and temperature and replace fluid will help resolve symptoms.

Medicine-induced nausea and vomiting

- Many medications can cause nausea and vomiting. If medication is suspected, then the pharmacist should contact the prescriber to discuss alternative treatment options.
- **NSAIDs** are common causes.
- Some **antibiotics** may cause nausea and vomiting. For example: doxycycline.
- Other frequently implicated medicines are cytotoxic drugs, iron, potassium supplements, selective serotonin reuptake inhibitors (SSRIs), nicotine gum (ingestion of nicotine rather than buccal absorption), estrogens and other hormonal drugs, steroids and narcotic analgesics.
- Nausea and vomiting may be signs of ***drug toxicity*** as in theophylline and digoxin toxicity. In such cases, **Immediate referral** should be done.
- ***Digoxin toxicity*** may show itself by producing nausea and vomiting, and such symptoms in a patient who is taking *digoxin*, especially an **elderly person**.
- Symptoms can sometimes be improved by **taking the medication with food**, but if they continue, the patient should see the doctor.

Special cases

- Vomiting and nausea are common in patients with migraines.
- Raised intracranial pressure can cause nausea and vomiting.
- Any middle ear disturbance or imbalance may produce nausea and vomiting. Tinnitus, dizziness and vertigo are suggestive of Ménière's disease.

Indications of referral

- Children who fail to respond to OTC treatment
- Moderate to severe abdominal pain
- Suspected pregnancy
- Unexplained nausea and vomiting in any age group
- Vomiting in children under 1 year old lasting longer than 24 hours. According to some recommendations: Children under 2 years are referred, whatever the duration, because of the risks from dehydration.
- Adults should be referred to the doctor if vomiting has been present for longer than 2 days.
- Chronic vomiting are referred as such symptoms may indicate a chronic disease.

Treatment

- Patients who are vomiting should be referred to the doctor. The pharmacist can initiate rehydration therapy in the meantime. Oral rehydration solutions should be offered.
- Ginger (*Zingiber officinale*) has some limited data to support use in pregnancy, motion sickness, and surgery.
- Peppermint (*Mentha piperita*), chamomile (*Matricaria recutita*), and lemon balm (*Melissa officinalis*) are thought to have antispasmodic properties that may be helpful in treating nausea and vomiting.
- Prochlorperazine is licensed for the relief of nausea and vomiting associated with migraine in adults more than 18 years.
- Domperidone is no more licensed for pharmacy sale in UK. It is withdrawn from US market over fears over its potential cardiac side effects.
- Vitamin B6 is commonly used as anti-emetic. It is more effective than placebo. It has been advocated for use in pregnant women.
- Meclozine (=Meclizine) and some first-generation anti-histamines are also used.
- Mixture of phosphoric acid/dextrose/fructose is used to relief of upset stomach with nausea. Its mechanism may be related to delay of gastric emptying time and decreased smooth-muscle contraction. Because of its high carbohydrate content, this product is not recommended for patients with diabetes mellitus

Common Cold

The common cold comprises a mixture of viral upper respiratory tract infections.

Colds, along with coughs, represent the largest caseload for primary healthcare workers. Because the condition has no specific cure and is self-limiting with two-thirds of sufferers recovering within a week, it would be easy to dismiss the condition as unimportant.

Although colds are self-limiting, many people choose to buy OTC medicines for symptomatic relief. Some of the ingredients of OTC cold remedies may interact with prescribed therapy, occasionally with serious consequences. Therefore, careful attention needs to be given to taking a medication history and selecting an appropriate product.

Prevalence and epidemiology

The common cold is extremely prevalent and usually caused by viral respiratory tract infection. Other causes include rhinitis, rhinosinusitis and otitis media. Sometimes, it can be caused by influenza.

Children contract colds more frequently than adults with on average five to six colds per year compared to two to four colds in adults, although in children this can be as high as 12 colds per year. Children aged between 4 and 8 years are most likely to contract a cold and it can appear to a child's parents that one cold follows another with no respite. By the age of 10 the number of colds contracted is half that observed in pre-school children.

Signs and symptoms:

The nature and severity of symptoms will be influenced by factors such as the causative agent, patient age and underlying medical conditions. Following an incubation period of between 1 and 3 days, the patient develops a sore throat and sneezing, followed by profuse nasal discharge and congestion.

In addition, headache, mild to moderate fever and general malaise might be present. Most colds resolve in 1 week, but up to a quarter of people will have symptoms lasting 14 days or more.

Patients with acute sinus involvement that fails to respond to decongestant therapy or with middle ear pain that fails to respond to analgesia may need for antibiotics. Patients with symptoms indicative of flu or vulnerable patient groups, such as the very elderly need an assessment of symptom severity by doctor.

- **Age**

Children are more susceptible to URTI than are adults and may get complications. Older people, particularly if they are frail and have co-morbidities (e.g. diabetes), may be at risk of complications such as pneumonia.

Children aged between 6 and 12 years can still use preparations containing antihistamines, nasal decongestants or cough preparations; but with an advice to limit treatment to 5 days or less.

- **Duration**

The symptoms of the common cold usually last for 7–14 days. Some symptoms, such as a cough, may persist after the worst of the cold is over and coughing for 3 weeks is not unusual.

Points indicative of referral for common cold

- Earache not settling with analgesic
- Very young patients
- Frail and old patients
- Patients with heart or lung disease, kidney disease, diabetes, compromised immune system
- Persisting fever and productive cough
- Signs of delirium
- Signs of pleuritic-type chest pain
- Asthma

Management:

Hygiene advice

Basic good hygiene measures may help to prevent spread infection of cold or flu. These include:

- Washing hands frequently with soap and hot water when the person has symptoms of the common cold or comes into contact with someone who has symptoms
- Avoiding the sharing of towels
- For children, discouraging the sharing of toys with an infected child.

Treatment:

Many of the active ingredients found in cold remedies are also constituents of cough products. Often they are combined and marketed as cough and cold or flu remedies.

- ***Antihistamines***

First-generation antihistamines, such as chlorphenamine, diphenhydramine and triprolidine, are now included in some cough and cold remedies. Antihistamines when used as monotherapy did not have significant benefit clinically in nasal congestion, rhinorrhea or sneezing in older children and adults.

- ***Sympathomimetics***

Topical oxymetazoline and xylometazoline and oral ephedrine, phenylephrine, pseudoephedrine and phenylpropanolamine are decongestants and sympathomimetics. No difference in efficacy was found between topical or systemic products. Nasal administration of sympathomimetics represents the safest route of administration.

Oral or nasal sympathomimetics should not be given to children under 6 years of age and for those aged between 6 and 12 duration of treatment should be limited to a maximum of 5 days. Rebound congestion (rhinitis medicamentosa) can occur with topically applied but not oral sympathomimetics.

- ***Analgesics and antipyretic***

Paracetamol is the preferred analgesic and antipyretic.

- ***Combination preparations***

Preparations with multiple ingredients have a very limited role to play in the management of coughs and colds. However, patients might perceive that an 'all in one' medicine as better value for money and, potentially, compliance with such preparations might be improved.

Alternative therapies:

- ***Saline sprays***

Nasal sprays are preferable for adults and children over 6 years old because the small droplets in the spray mist reach a large surface area. Drops are more easily swallowed, which increases the possibility of systemic effects.

For children under 6 years old, drops are preferred because in young children the nostrils are not sufficiently wide to allow the effective use of sprays.

- ***Zinc lozenges***

Some studies found that zinc (lozenges or syrup) is beneficial in reducing the duration and severity of the common cold in healthy people, when taken within 24 hours of onset of symptoms.

- ***Vitamin C***

Vitamin C prophylaxis had no effect on the incidence of the common cold in the general community, and a small effect on the duration of a cold.

- ***Vapor inhalation***

Steam inhalation has long been advocated to aid symptoms of the common cold, usually with the addition of menthol crystals.

Aromatic inhalants should not be used in those 3 months or younger.

- ***Cough remedies***

Simple cough remedies (such as those containing glycerin, honey or lemon) can be used in children. Alternatively, for children over the age of 1 year, a warm drink of honey and lemon could be given.

- ***Herbal products***

Some echinacea preparations may be better than placebo or no treatment for the prevention and treatment of colds.

- ***Antivirals***

The effectiveness of antivirals during a pandemic cannot be known until used in such a situation and can only be guessed at based on experience in seasonal influenza and in those infected with avian flu.

Some antiviral products are licensed for use: oseltamivir, zanamivir and amantadine. They are POM.

- ***Antibiotics***

Typical flu symptoms include cough, retrosternal discomfort, wheeze and phlegm (symptoms of acute bronchitis), and by themselves do not require antibiotics in a person who is not at risk.

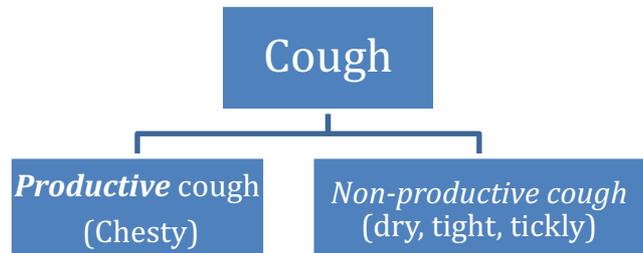
However, if these symptoms worsen with a persistent or recurring fever, pleuritic-type chest pain or breathlessness, then a pneumonia might be developing.

Cough

Coughing is a protective reflex action caused when the airway is being irritated or obstructed. Its purpose is to clear the airway so that breathing can continue normally.

Classification:

Coughs can be classified according to:



- **Nature of cough**

- **Productive cough (chesty or loose)**

Sputum is normally produced by the body and it is an oversecretion that leads to coughing. Oversecretion may be caused by irritation of the airways due to infection, allergy, etc., or when the cilia are not working properly (e.g. in smokers).

Non-colored (clear or whitish) sputum is uninfected and known as mucoid. Green sputum is not uncommon in asthma and is thought to be due to eosinophils.

Colored sputum is common and in most cases does not signify the need for antibiotic therapy.

- **Unproductive (dry, tickly or tight)**

In an unproductive cough, no sputum is produced. These coughs are usually caused by viral infection that temporarily damages and irritates the airway and are self-limiting.

However, many patients will say that they are not producing sputum, although they go on to say that they 'can feel it on their chest'. In these cases, the cough is probably productive in nature and should be treated as such.

- **Duration**

<i>Acute cough</i>	<i>Sub-acute cough</i>	<i>Chronic cough</i>
less than 3 weeks	3-8 weeks	more than 8 weeks (4 weeks in children)

Most coughs are self-limiting and will get better with or without treatment. Cough can often go on for 3 weeks or more after a bad cold but usually slowly subsides over this time.

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Acute cough is usually caused by a viral upper respiratory tract infection. Acute viral URIs exhibit seasonality, with higher incidence seen in the winter months.

In general, a cough of longer than 2-3 weeks' duration that has showed no improvement, or is getting worse, should be referred to the physician for further investigation.

Causes of cough

<i>Frequency</i>	<i>Causes</i>
<i>Most Likely</i>	Viral infection
<i>Likely</i>	Upper airways cough syndrome (postnasal drip) Acute bronchitis
<i>Unlikely</i>	Croup, Chronic bronchitis, Asthma, Pneumonia ACE inhibitor induced
<i>Very unlikely</i>	Heart failure, bronchiectasis, tuberculosis, cancer, pneumothorax, lung abscess, gastroesophageal reflux disease

Respiratory symptoms for direct referral

Chest pain	<ul style="list-style-type: none"> • Pain on inspiration of without inspiration. • It can be caused by respiratory or non-respiratory causes such as heart burn (gastric) or cardiac causes.
Wheezing	<ul style="list-style-type: none"> • It may be due to infection, asthma or cardiac causes.
Shortness of breath	<ul style="list-style-type: none"> • It may be due to asthma or cardiac causes.
Sputum	<ul style="list-style-type: none"> • It can be clear or colored. • Clear, thin (serous) sputum may be a feature of heart failure. • Colored sputum may be caused by an infection. • Hemoptysis may be a sign of tuberculosis.
Duration	<ul style="list-style-type: none"> • Duration longer than 3 weeks or cough that recurs on a regular basis. This suggests non-acute cause of cough and requires further investigation.
Debilitating symptoms	<ul style="list-style-type: none"> • Debilitating symptoms in the elderly. This patient group at greater risk of complications.
Nocturnal cough	<ul style="list-style-type: none"> • Persistent nocturnal cough in children suggests possible asthma.

Treatment

The majority of coughs presenting in the pharmacy will be caused by a viral upper respiratory tract infection. They will often be associated with other symptoms of a cold. The evidence to support the use of cough suppressants and expectorants is not strong but some patients report finding them helpful.

Establishing who the patient is – child or adult – will influence the choice of treatment and whether referral is necessary.

Cough preparations for productive cough

- **Expectorants**

A number of active ingredients have been formulated to help expectoration, including guaifenesin, ammonium salts (e.g., ammonium chloride), and some plant products such as ipecacuanha. They increase the amount or hydration of secretions.

Guaifenesin (glyceryl guaiacolate) is the only expectorant with any evidence of effectiveness. However, trial results are not convincing and guaifenesin is probably little or no better than placebo.

- **Mucolytics**

A mucolytic agent is an agent which dissolves thick mucus and is usually used to help relieve respiratory difficulties.

Many mucolytic drugs are available, including acetylcysteine, ambroxol, carbocisteine and bromhexine.

Cough preparations for non-productive cough

- **Cough suppressants (antitussives)**

Cough suppressants act directly on the cough center to depress the cough reflex. Their effectiveness has been investigated in patients with acute and chronic cough. Of greatest interest to OTC medication are trials investigating acute cough, because patients suffering from chronic cough should be referred to the doctor.

- **Opioids and related drugs**

Codeine is generally accepted as a standard or benchmark antitussive against which all others are judged.

Dextromethorphan has been shown to be effective in chronic cough but studies assessing the efficacy of dextromethorphan in acute cough have shown it to be no better than placebo. It appears to have limited abuse potential and fewer side effects than codeine.

○ ***Antihistamines***

Antihistamines have been included in cough remedies for decades. Their mechanism of action is thought to be through the anticholinergic-like drying action on the mucous membranes and not via histamine.

For the relief of cough and cold symptoms, most notably with diphenhydramine. Less-sedating antihistamines, have not been shown to have any benefit in treating coughs compared to placebo.

Other preparations for both productive and non-productive cough

• ***Cough remedies***

Simple cough remedies (such as those containing glycerin, honey or lemon) can be used in children. Alternatively, for children over the age of 1 year, a warm drink of honey and lemon could be given.

• ***Demulcents***

Demulcents, for example simple linctus, provide a safe alternative for at-risk patient groups such as the elderly, pregnant women, young children and those taking multiple medication.

They can act as useful placebos when the patient insists on a cough mixture and will not take no for an answer. If recommended they should be given three or four times a day.

Weight loss and treatment of Obesity

Obesity is a growing epidemic. As a consequence, the risk of diseases such as diabetes and cardiovascular disease are also increasing, resulting in a situation where the current and future generations could have a shorter life span than their parents.

Obese individuals are more likely to have high blood pressure, diabetes and high blood fats.

Body mass index

Body mass index (BMI) or Quetelet's index is calculated as the weight (kg) divided by height squared (m²). BMI of over 25 is classified as overweight and for obesity the value is 30.

BMI equation:

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

Category	BMI
Below normal weight	< 18.5
Normal weight	≥ 18.5 and < 25
Overweight	≥ 25 and < 30
Class I Obesity	≥ 30 and < 35
Class II Obesity	≥ 35 and < 40
Class III Obesity	≥ 40

Causes of obesity

- Genetics
- Imbalance between energy intake (food and beverages) and energy expenditure (exercise)
- Cultural norms
- Socioeconomic status
- Gender
- Ethnicity

Management of obesity

Recommended weight loss goals are 1–4 kg per month in the short term, and 10–20% of body weight in the medium to long term.

Diet and exercise (such as brisk walking) are still considered the first-line treatment of obesity.

In order to achieve a healthy body weight, it is also important to build regular, moderate exercise into a daily routine.

Walking, jogging, swimming and cycling are all excellent choices. Remember to advise patients to start slowly and gradually build up their exercise.

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Diet

The recommended calorie intake should be between 1200 and 1600 kcal per day. People should be advised to moderate fat intake by eating less fatty meat, fatty cheese, full-cream milk, fried food, etc. and to reduce the amount of sugar.

They should consider eating more vegetables, fruit, cereals, whole grain bread, poultry, fish, rice, skimmed or semi-skimmed milk, grilled food, lean meat, pasta, etc.

Orlistat

Orlistat inhibits pancreatic and gastric lipase, which reduces the absorption of fat from the gut. It is indicated for weight loss in adults (18 or over) who are overweight (BMI ≥ 28 kg/m²) and should be taken in conjunction with a mildly hypocaloric, lower-fat diet. It produces a modest weight loss of approximately 5–10% of body weight.

It is available in 120mg capsule (*Xenical*®). A dose of 60 mg (*Alli*®) is considered OTC.

The recommended dose is 1 capsule three times daily and it should be taken immediately before, during or up to 1 hour after each main meal. If a meal is missed or contains no fat, the dose of orlistat should not be taken.

The best results are seen in the short term (6–12 months); long-term results rely heavily on lifestyle changes. If weight loss has not been achieved after 12 weeks, then the patient should stop taking orlistat.

Side effects are largely GI and include fecal urgency and incontinence, oily evacuation and spotting, flatus and abdominal pain.

These can be minimized by restricting fat intake to less than 20g per meal.

There is limited data of orlistat being used in pregnant and breastfeeding women and is therefore not recommended.

Supplementation with fat-soluble vitamins (A, D, E and K) is recommended and can be achieved by taking a multivitamin. Because of the effect on vitamin K levels, patients on warfarin should avoid using orlistat. orlistat may decrease ciclosporin levels and requires close monitoring.

There is no clinical evidence of a drug interaction between orlistat and oral contraceptives but if a woman taking orlistat has severe diarrhea, they should be advised to use an additional contraception method.

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Other non-OTC agents

<i>Glucagon-like Peptide-1 Agonists</i>	
Liraglutide	Liraglutide is a glucagon like peptide-1 (GLP-1) analog. The dose for obesity differs from that of liraglutide (<i>Victoza</i> ®) that is used to treat diabetes. <i>Saxenda</i> ® is initiated at 0.6 mg SC once daily for 1 week, and is then increased by 0.6 mg/day in weekly intervals until a dose of 3 mg/day is achieved.
<i>Antidepressants, dopamine reuptake inhibitors + opioid antagonists</i>	
bupropion and naltrexone	This may regulate activity in the dopamine reward system of the brain that helps control food cravings and overeating behaviors.
<i>CNS Stimulants, Anorexiant</i>	
Lorcaserin	Lorcaserin is an adjunct to a reduced-calorie diet and exercise for long-term weight management. It has a potential for abuse.
Phentermine	Phentermine is intended for patients with an initial BMI of ≥ 30 (obese). It is also appropriate for patients with a BMI of ≥ 27 (overweight) who have other risk factors (eg, diabetes, hyperlipidemia, hypertension).
Phentermine / topiramate	The drug combination is indicated as an adjunct to a reduced-calorie diet and increased physical activity for long-term weight management in adults.
Diethylpropion	Diethylpropion is indicated for use as a short-term adjunct in the management of obesity.
Phendimetrazine	Phendimetrazine is indicated for use as a short-term adjunct in the management of obesity in patients aged ≥ 17 y. It is a sympathomimetic amine that reduces appetite, an effect that appears to be secondary to CNS effects.
Benzphetamine	Benzphetamine is a sympathomimetic amine that reduces appetite, an effect that appears to be secondary to CNS effects. It is used as a short-term adjunct to caloric restriction in exogenous obesity.
<i>Melanocortin Agonist (MC4 agonist)</i>	
Setmelanotide	It is indicated for adults and for children aged 6 years or older, being employed for chronic weight management in obesity resulting from some genetic defects. (such as proopiomelanocortin (POMC), proprotein convertase subtilisin/kexin type 1 (PCSK1), or leptin receptor (LEPR) deficiency.

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<i>Off-labeled Agents - Oral antihyperglycemic agents</i>	
Metformin	Metformin is not indicated for obesity, but it is useful in preventing diabetes and improving insulin resistance in conditions such as polycystic ovary syndrome. Its use was associated with weight neutrality or mild weight loss.

<i>Others - Withdrawn from Market</i>	
Sibutramine	It was widely marketed and prescribed as an adjunct in the treatment of obesity along with diet and exercise. In 2010, it was withdrawn from the market due to concerns over minimal efficacy coupled with increased risk of adverse cardiovascular events.

Bariatric Surgery

Surgical therapy for obesity (bariatric surgery) is the only available therapeutic modality associated with clinically significant and relatively sustained weight loss in subjects with morbid obesity associated with comorbidities.

1-Mouth ulcer

Oral sores, mouth ulcers, aphthous ulcers, or canker sores are terms used to describe clinical presentations of superficial painful oral lesions that occur in recurrent bouts at intervals between a few days to a few months.

They are extremely common and affecting as many as one in five of the population, and are a recurrent problem in some people.

Mouth ulcer can occur anywhere in the oral cavity and oropharyngeal region, including the lips, oral mucosa (movable tissue inside the lips, vestibule, and cheeks), gingivae or gums, tongue, soft and hard palate, and throat. Most oral sores are painful and annoying and, in severe cases, can cause significant morbidity.

Types of aphthous ulcers

<i>Minor</i>	<i>Major (Sutton's disease)</i>	<i>Herpetiform</i>
<i>80% of patients</i>	<i>10–12% of patients</i>	<i>8–10% of patients</i>
<i>2–10 mm in diameter (usually 5–6 mm)</i>	<i>Usually over 10 mm in diameter; may be smaller</i>	<i>Pinhead-sized</i>
<i>Round or oval</i>	<i>Round or oval</i>	<i>Round or oval, coalesce to form irregular shape as they enlarge</i>
<i>Usually not very painful</i>	<i>Prolonged and painful ulceration; may present patient with great problems – eating may become difficult</i>	<i>May be very painful</i>
<i>Healing occurs in about 7 to 10 days.</i>	<i>Healing is slow, over 10 to 40 days.</i>	<i>Healing takes about 7 to 10 days.</i>

Other types

- **Smoking** and **alcohol** consumption are two major risk factors for mouth ulcer.
- Mouth ulcer caused by **trauma**
- Mouth ulcer caused by **oral thrush** usually presents as creamy-white soft elevated patches.
- **Herpes simplex virus type 1 (HSV-1)** is a common cause of oral ulceration in children. This infection is referred to as **primary herpetic gingivostomatitis (PHGS)** and usually occurs in infants and children (between 2 and 3 years of age). **Recurrent Herpetic Infection** is also called “**cold sores**”.

- Oral **cancer** patients are suffering from mouth ulcer.
- Mouth ulcer can be noticed in patient suffering from some **skin conditions**, such as *Erythema multiforme*.
- Most **Behcet's syndrome** patients are suffering from recurrent, painful major aphthous ulcers that are slow to heal.
- Other autoimmune diseases such as **Crohn's disease**.
- Some **medications** can cause ulcers. These include cytotoxic agents, nicorandil, alendronate, NSAIDs and beta-blockers.

Treatment

Most cases are self-limiting. Symptomatic treatment of minor aphthous ulcers can relieve pain and reduce healing time. Topical corticosteroids remain the mainstays of treatment. Other active ingredients include antiseptics, and local anesthetics. If there is no improvement after 1 week, the patient should see the doctor.

Agents	Comments
Chlorhexidine mouthwash	Mouthwashes can be useful where ulcers are difficult to reach. It prevents secondary bacterial infections.
Topical corticosteroids	Hydrocortisone and other steroids act locally on the ulcer to reduce inflammation and pain and to shorten healing time. Corticosteroids have no effect on recurrence.
Local analgesics	Benzydamine mouthwash or spray and choline salicylate dental gel are no more beneficial than a placebo, but they can be useful in very painful major ulcers as they can produce transient pain relief.
Local anesthetics	Local anesthetic (lidocaine and benzocaine) formulations are effective in producing temporary pain relief, maintenance of gels and liquids in contact with the ulcer surface is difficult. Reapplication of the preparation may be done when necessary.
Protectants and bioadherents	Mucoadhesive action reduces pain by adhering to the mucosal surface of the mouth. Orabase is a paste of gelatin, pectin and carmellose sodium, which sticks when it comes in contact with wet mucosal surfaces. Gelclair is an oral bioadherents product.

Referral points:

Patient suffering from mouth ulcers is referred in case of:

- Duration of longer than 3 weeks, or if there is no improvement after 1 week of treatment.
 - Associated weight loss
 - Ulcer suggestive of cancer
 - Involvement of other mucous membranes or eyes
 - Rash
 - Suspected adverse drug reaction
 - Diarrhea
-

2-Oral thrush

Thrush (candidiasis or candidosis) is a fungal infection that occurs commonly in:

- the mouth (oral thrush)
- the nappy area in babies
- the vagina

Oral thrush in babies can be treated by the pharmacist. Oral thrush is most common in babies, particularly in the first few weeks of life. The infection can pass on by the mother during childbirth. Oral thrush in older children and adults is rarer, but may occur after antibiotic or inhaled steroid treatment. In this older group it may also be a sign of immunosuppression.

Clinical presentation

Oral thrush affects the surface of the tongue and the insides of the cheeks. When candidal infection involves mucosal surfaces, white patches known as plaques are formed, which resemble milk curds.

The distinguishing feature of plaques due to *Candida* is that they are not so easily removed from the mucosa, and when the surface of the plaque is scraped away, a sore and reddened area of mucosa will be seen underneath, which may sometimes bleed.

In babies, recurrent infection is uncommon, although it may sometimes occur following reinfection from the mother's nipples during breastfeeding or from inadequately sterilized bottle teats in bottle-fed babies. Candidal infection is thought to be an important factor in the development of nappy rash.

Wearing dentures, especially if they are not taken out at night, not kept clean, or do not fit well can predispose people to thrush.

Medications causing thrush

- Immunocompromised patients are more likely to get thrush.
- Broad-spectrum antibiotic therapy can wipe out the normal bacterial flora, allowing the overgrowth of fungal infection.
- Drugs that suppresses the immune system, such as cytotoxic agents and steroids, will reduce resistance to infection leading to thrush.
- Patients using inhaled steroids for asthma are advised to rinse the throat with water after using the inhaler.

Management

- Although some reports indicate treatment is not necessary for healthy neonates, no published studies support this assertion.
- Treatment with antifungal agents should be continued for up to 2 days after the symptoms have cleared to prevent relapse and reinfection.
- Oral thrush should respond to treatment quickly. Cases failed to respond to treatment after 1 week should be referred.
- Antifungal agents:
 - Nystatin solution
 - Miconazole oral gel
 - Clotrimazole troche
 - Clotrimazole oral solution.
- Gentian violet solution should not be swallowed.
- Medication can also be directly applied to the lesions with a nonabsorbent swab or applicator. The best time to administer medication is between meals because this allows longer contact time.
- The antifungal oral gel must not be applied to the nipple of a breastfeeding woman for administration to an infant, due to the risk of choking.
- Systemic antifungal agents may be prescribed by a physician for resistant cases.

Referral points

The following cases should be referred to the doctor:

- Babies under 4 months
- Adults and older children without obvious cause
- Recurrent/persistent thrush
- Failed medication. If the symptoms have not cleared up within 1 week, patients should see their doctor.

3- Napkin Rash (napkin dermatitis)

Most babies are suffering napkin (nappy) rash at some stage during their infancy.

Contributing factors

- Contact of urine and feces with the skin due to ammonia, produced as a breakdown product of urine in soiled nappies.
 - Irritant effect of soaps, detergents, antiseptics or bubble baths and sensitivity reactions to them as they may have left in reusable nappies after inadequate rinsing and sensitivity reactions to ingredients in some topical preparations, for example, in baby wipes.
 - Wetness and maceration of skin due to infrequent nappy changes. Maceration of the skin ensues, leading to enhanced penetration of irritant substances through the skin and the breakdown of the skin.
 - Inadequate skin care
 - Wearing occlusive plastic pants exacerbates this effect.
- Frequent changes of nappy together with good nappy-changing routine and hygiene are essential.

Consultation points:

- ***Nature and location of rash***

Nappy rash, sometimes called napkin dermatitis, appears as an erythematous rash on the buttock area.

Other areas of the body are not involved, in contrast to other diseases.

- ***Severity***

In general, if the skin is unbroken and there are no signs of secondary bacterial infection, treatment may be considered. The presence of bacterial infection could be signified by weeping or yellow crusting. Referral to the doctor would be advisable if bacterial infection were suspected.

Secondary fungal infection is common in napkin dermatitis and the presence of satellite papules (small red lesions) would indicate such an infection. Secondary fungal infection could be treated by the pharmacist using one of the azole topical antifungal preparations that are available.

- ***Duration***

If the condition has been present for longer than 2 weeks, the pharmacist might decide that referral to the doctor would be the best option, depending on the nature and severity of the rash.

• **Previous history and other symptoms**

The pharmacist should ask if any other **treatment** was taken for any other ailment or to manage the recent symptoms with OTC products.

Napkin dermatitis sometimes occurs during or after a bout of **diarrhea**, when the perianal skin becomes reddened and sore. Diarrhea may occur as a side effect of antibiotic therapy.

Sometimes thrush in the nappy area may be associated with **oral thrush** that causes a sore mouth or throat. If this is suspected, referral to the doctor is advisable.

Treatment

Treatment and the prevention of further episodes can be achieved by a combination of OTC treatment and advice on care of the skin in the nappy area. A baby with nappy rash that does not respond to skin care and OTC treatment within 1 week should be seen by the doctor.

Agents	Comments
Emollient preparations	Emollient preparations are the mainstay of treatment. The choice of individual preparation may sometimes depend on customer preference and many preparations are equally effective.
Zinc	Zinc (e.g. zinc oxide) acts as a soothing agent.
Lanolin	Lanolin hydrates the skin.
Castor oil / cod liver oil	Castor oil and cod liver oil provide a water-resistant layer on the skin.
Antibacterials	These may be useful in reducing the number of bacteria on the skin. Some antibacterials may produce sensitivity reactions.
Antifungals	<ul style="list-style-type: none"> • Secondary infection with <i>Candida</i> is common in napkin dermatitis and the azole antifungals would be effective. • Miconazole or clotrimazole topical cream applied twice to four times daily could be recommended by the pharmacist with advice to consult the doctor if the rash has not improved within 5 days. • If an antifungal cream is advised, treatment should be continued for 4 or 5 days after the symptoms have apparently cleared. • An emollient cream or ointment can still be applied over the antifungal product.

Referral points:

Baby with nappy rash is to be referred in case of:

- Broken skin and severe rash
 - Unwell baby
 - Signs of infection
 - Other body areas affected
 - Persistence of rash (longer than 2 weeks or 1 week of OTC treatment)
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4- Threadworms (pinworms)

Infection with *Enterobius vermicularis* is common in young children. Many parents feel embarrassed about discussing threadworms and feel ashamed that their child is infected. Pharmacists can give reassurance that this is a common problem.

Clinical presentation

Perianal itching is caused by an allergic reaction to the substances in and surrounding the worms' eggs. Sensitization takes a while to develop. So in someone infected for the first time, itching will not necessarily occur. Itching is worse at night, because at that time the female worms emerge from the anus to lay their eggs on the surrounding skin. Persistent scratching may lead to secondary bacterial infection.

Loss of sleep due to itching may lead to tiredness and irritability during the day. The worms themselves can be easily seen in the feces as white- or cream-colored thread-like objects.

The pharmacist should enquire whether any other member of the family is experiencing the same symptoms. Absence of perianal itching and threadworms in the feces does not mean that the person is not infected.

Management

One dose of an anthelmintic treatment is followed by another 2 weeks later to destroy any worms that might have hatched and developed after the first dose. Only two doses are required.

In addition to anthelmintic treatment, it is essential that advice be given about hygiene measures to prevent reinfection.

All family members should be treated at the same time, even if only one has been shown to have threadworms. Mebendazole and albendazole are not recommended for pregnant women. Hygiene measures are the only options for pregnant and breastfeeding women. Although, the World Health Organization has recommended use of albendazole and mebendazole during pregnancy and to treat children as young as 12 months.

Medications:

<i>Anthelmintics</i>	<i>Age for OTC</i>	<i>Notes</i>
Mebendazole	>2 years	It can be used in children over 6 months as POM.
Albendazole	>1 year	Babies below 2 year receive half recommended dose.
Piperazine	>3 months	Safe in pregnancy
Levamisole	No more recommended.	

Referral points

Infection other than the threadworm suspected must be referred in case of:

- Recent travel abroad
- Medication failure
- Children under 2 years of age
- Pregnant or breastfeeding

5- Head lice

Humans act as hosts to three species of louse:

Species of Louse	Type of Lice
<i>Pediculus capitis</i>	Head lice
<i>Pediculus corporis</i>	Body lice
<i>Pediculus pubis</i>	Pubic lice

Head lice affect all ages, although they are much more prevalent in children aged 4 to 11 years, especially girls. Head lice can occur at any time and do not show any seasonal variation. Head lice can only be transmitted by head-to-head contact. Occasionally contact is insufficient for lice to be transferred between heads.

Checking for infection

Wet combing (Bug busting method) of the hair is a more reliable detection method than scalp inspection. Wet combing is preferred on dry combing.

The presence of empty eggshells (nits) attached to the hair shafts is not necessarily evidence of current infection unless live lice are also found. Parents sometimes think that treatment has failed because nits can still be seen in the hair.

Treatment

Pediculicides are insecticides. They act by one of the following mechanisms:

- Physical Pediculicides
 - These kill the lice by a variety of means, such as physically coating their surfaces and suffocating them (dimethicone does this) or dissolving the wax coating of the louse and causing death by dehydration.
- Chemical Pediculicides
 - They are more effective and do not cause resistance to develop, this is usually reserved for second-line use. E.g.: Malathion and permethrin

There are a variety of complementary therapies, many derived from herbs. These include tea tree oil, coconut oil, eucalyptus and lavender-based products.

There are many home remedies, including the copious use of hair conditioner, baby oil, petroleum jelly and diluted white vinegar. Electric combs have also been advocated.

Pediculicides

<i>Agents</i>	<i>Dosage forms</i>	<i>Age of use</i>	<i>Instructions of use</i>	<i>Status</i>
Permethrin	creme rinse lotion shampoo	6 months	It should be left on the hair for 10 min before rinsing the hair thoroughly with water.	OTC (UK and USA)
Malathion	Liquid Lotion shampoo	6 months	Liquid should be applied to dry hair and left for 12 hours before washing off.	OTC (UK) POM (USA)
Dimeticone	lotion	6 months	It has to be left on for a minimum of 8 hours before being washed out with shampoo.	OTC (UK)
Isopropyl myristate	solution	2 years	It has to be left on for a 10 minutes before being washed out with shampoo.	OTC (UK)
Pyrethrins with piperonyl butoxide	shampoo	6 months	The shampoo should remain on the head for 10 mins.	OTC (USA)
Benzyl alcohol	lotion	6 months	The lotion should remain on the head for 10 mins.	POM
Spinosad	topical suspension	4 years	As per product.	POM
Ivermectin	lotion	6 months	As per product.	POM
Lindane	It is no longer recommended			POM

Allergic rhinitis

Allergic rhinitis involves inflammation of nasal mucous membranes in sensitized individuals when inhaled allergenic particles contact mucous membranes and elicit a response mediated by immunoglobulin E (IgE) or other inflammatory mediators, such as histamine, leukotrienes, prostaglandin, tryptase, and kinins.

Mast cells interact with airborne allergens, triggering release of inflammatory mediators. These mediators cause vasodilation, increased vascular permeability, and production of nasal secretions. Histamine produces rhinorrhea, itching, sneezing, and nasal obstruction. The inflammatory response causes persistent chronic symptoms, including nasal congestion.

There are two types:

- **Seasonal** allergic rhinitis (or *hay fever*). It occurs in response to specific allergens (pollen from trees, grasses, and weeds) present at predictable times of the year.
- **Persistent** (or *perennial*) allergic rhinitis. It occurs year-round in response to nonseasonal allergens (e.g., dust mites, animal dander, and molds).

Clinical presentation

- Symptoms include clear rhinorrhea, sneezing, nasal congestion, postnasal drip, allergic conjunctivitis, and pruritic eyes, ears, or nose.
- In children, physical examination may reveal dark circles under the eyes (allergic shiners), a transverse nasal crease caused by repeated rubbing of the nose, adenoidal breathing, edematous nasal turbinates (*conchae*) coated with clear secretions, tearing, and periorbital swelling.
- Patients may complain of loss of smell or taste, with sinusitis or polyps. Postnasal drip with cough or hoarseness can be bothersome.
- Untreated rhinitis symptoms may lead to insomnia, malaise, fatigue, and poor work or school performance.
- 10-40% of allergic rhinitis patients have asthma.
- Complications include recurrent and chronic sinusitis and epistaxis.

Treatment

Nonpharmacologic therapy

- Avoiding offending allergens
- Patients sensitive to animals benefit most by removing pets from the home.
- Reducing exposure to dust mites.
- Patients with seasonal allergic rhinitis should keep windows closed and minimize time spent outdoors during pollen seasons. Filter masks can be useful.

Pharmacologic therapy

➤ **Antihistamines**

Histamine H₁-receptor antagonists are effective in preventing the histamine response but not in reversing its effects after they have occurred.

Oral antihistamines are divided into two main categories:

- first-generation or sedating antihistamines
 - Ex: Cyproheptadine, chlorpheniramine, diphenhydramine, clemastine and dexchlorpheniramine
- second-generation or non-sedating antihistamines
 - Ex: Cetirizine, levocetirizine, loratadine, desloratadine, fexofenadine
- *Azelastine* is an ***intranasal antihistamine***. relieves symptoms of seasonal allergic rhinitis. *Olopatadine* is a second-generation antihistamine. It can be used as ***ophthalmic eye drops*** for conjunctivitis associated with allergic rhinitis. Also, it is available in intranasal dosage form as an alternative to azelastine and may cause less drowsiness.
- Symptom relief is caused in part by an anticholinergic drying effect that reduces nasal, salivary and lacrimal gland hypersecretion. Antihistamines antagonize increased capillary permeability, wheal-and-flare formation, and itching.

➤ **Decongestants**

Topical and systemic decongestants are sympathomimetic agents that act on adrenergic receptors in nasal mucosa to produce vasoconstriction, shrink swollen mucosa, and improve ventilation. Decongestants work well in combination with antihistamines.

Rhinitis medicamentosa (rebound vasodilation with congestion) may occur with prolonged use of topical agents. So, these products should be used only when absolutely necessary (e.g., at bedtime) and in doses that are as small and infrequent as possible. Duration of therapy should be limited to 3 to 5 days.

Topical and systemic decongestants include:

- Pseudoephedrine, phenylephrine and phenylpropanolamine
- Xylometazoline, Naphazoline and Oxymetazoline (topical only)

➤ **Nasal Corticosteroids**

Intranasal corticosteroids relieve sneezing, rhinorrhea, pruritus, and nasal congestion with minimal side effects. These agents are an excellent choice for persistent rhinitis and can be useful in seasonal rhinitis. Treatment should begin 2–3 weeks before the start of the hay fever season.

E.g.: Beclomethasone, budesonide, fluticasone, mometasone and triamcinolone.

Intranasal corticosteroids are also available in combinations with antihistamines.

➤ **Cromolyn Sodium**

Cromolyn sodium, a mast cell stabilizer, is available as a nonprescription nasal spray for symptomatic prevention and treatment of allergic rhinitis.

For seasonal rhinitis, treatment should be initiated just before the start of the offending allergen's season and continue throughout the season. In persistent rhinitis, effects may not be seen for 2 to 4 weeks.

➤ **Ipratropium Bromide**

Ipratropium bromide nasal spray is an anticholinergic agent useful in persistent allergic rhinitis. It exhibits antisecretory properties when applied locally and provides symptomatic relief of rhinorrhea.

➤ **Montelukast**

Montelukast is approved for treatment of persistent allergic rhinitis in children as young as 6 months and for seasonal allergic rhinitis in children as young as 2 years. It is effective alone or in combination with an antihistamine.

Montelukast is no more effective than antihistamines and less effective than intranasal corticosteroids.

Referral points:

<u>Signs and symptoms</u>	<u>Causes</u>
Wheezing and shortness of breath	suspected asthmatic attack
Tightness of chest	suspected asthmatic attack
Painful ear	suspected otitis media
Painful sinuses	suspected rhinosinusitis
Purulent conjunctivitis	Occasionally, this allergic conjunctivitis is complicated by a secondary infection.
Failed medication	no improvement within 5 days – some references 7 days

Atopy

Atopy is an exaggerated IgE-mediated immune response. The **atopic triad** or **atopy triad** is a set of comorbid conditions – atopic dermatitis (eczema), asthma, and allergic rhinitis.

Atopy refers to the genetic tendency to develop allergic diseases such as allergic rhinitis, asthma and atopic dermatitis (eczema). Atopy is typically associated with heightened immune responses to common allergens, especially inhaled allergens and food allergens.

Atopic March, sometime called **Allergic March**, refers to the natural history or typical progression of allergic diseases that often begin early in life. These include atopic dermatitis, food allergy, allergic rhinitis and asthma.

This means **atopic march** is **Atopy + food allergy**