Clinical pharmacy I

Assist Lec. Zainab Abdul Hameed

Skin Conditions I

ECZEMA/DERMATITIS

Dermatitis is more commonly used when an external precipitating factor is present (contact dermatitis). The rashes produced have similar features, but the distribution on the body varies and can be diagnostic.

Atopic eczema is a chronic, relapsing, itchy skin condition affecting up to 20% of children, and often greatly improving with age such that 2–10% of adults are affected. Atopy is the term used to describe a group of three conditions – eczema, asthma and hay fever – which commonly coexist in an affected individual and which run in families.

The rash of eczema typically presents as dry flaky skin that may be inflamed and have small red spots (Figure 4.1). The skin may be cracked and weepy and sometimes becomes thick. The rash is irritating and can be extremely itchy. If it is not itchy, it is unlikely to be eczema. Many cases of mild-to- moderate eczema can be managed by the patient with support from the pharmacist. There are two types of contact dermatitis, namely irritant and allergic. **Irritant dermatitis** is non-allergic and involves direct damage to the skin, whereas **allergic dermatitis** involves an immune response to the causative substance.

FIGURE 4.1 Typical eczema dermatitis rash

What you need to know

- Age
- Distribution of rash
- Itching
- Occupation/contact
- Previous history
- History of hay fever/asthma
- Aggravating factors

- Medication
- Effect on quality of life

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age/distribution

The distribution of the rash of atopic eczema tends to vary with age. During infancy, atopic eczema primarily involves the face, the scalp and the extensor surfaces of the limbs (Figure 4.2). The nappy area is usually spared. In White older children, the rash is most marked in the flexures: behind the knees, on the inside of the elbow joints and around the wrists, as well as the hands, ankles, neck and around the eyes. In Black and Asian children, the rash is often on the extensor surface of the joints and may have a more follicular or 'rougher' appearance.

FIGURE 4.2 Typical atopic eczema on flexor surface of forearm of child

In adults, the neck, the backs of the hands, the flexures of the elbows and knees and ankles and the feet are the most common sites for atopic eczema. This is often associated with generalised dryness and itching. People who have had childhood eczema often have dry skin for the rest of their life. The symptoms can overlap with contact dermatitis, as people with eczema are more prone to allergies.

Contact dermatitis most commonly is of the irritant type and affects the hands. It can occur at other sites depending on what triggers the skin reaction such that people with contact sensitivity to nickel may get a rash where their jewellery, spectacle frames or bra strap fastening touches the skin.

Itching

The condition is unlikely to be eczema/dermatitis if there is no itch. The skin is usually visibly irritated and the patient will often describe intense itching, which can disturb sleep. Babies or children will rub or scratch at the affected area. Long-standing or chronic eczema is characterised by thickened (lichenified) skin resulting from repeated scratching due to the itch.

Occupation/contact

Irritant contact dermatitis is most commonly caused by prolonged exposure to water (wet work) alongside soaps or detergents, which remove the natural fatty protective barrier from the skin. Typical occupations include cleaning,

hairdressing, food processing, fishing and metal engineering. Other substances that can irritate the skin include alkaline cleansing agents, degreasing agents, solvents and oils. They either cause direct and rapid damage to the skin or, in the case of weaker irritants, exert their irritant effect after continued exposure. Nappy rash (napkin dermatitis) is an irritant dermatitis and can be complicated by infection, for example, thrush. *Allergic contact dermatitis* is caused by an allergic response to substances that include chromates (present in cement and rust-preventive paint), nickel (present in jewellery), rubber and resins, dyes, certain plants (e.g. *Primula*), oxidising and reducing agents (as used by hairdressers when perming hair) and medications (including topical corticosteroids, *lanolin*, *neomycin* and *cetyl stearyl alcohol*). Eye make-up and hair dyes can also cause allergic contact dermatitis.

Previous history

Patients may ask the pharmacist to recommend treatment for eczema that has been previously diagnosed by the doctor. In cases of mild-to- moderate eczema, you can recommend the use of emollients and advise on skincare. Mild or moderate strength corticosteroids, such as *topical hydrocortisone* and *clobetasone* preparations, can also be recommended and supplied. However, where severe or infected exacerbations of eczema are involved, the patient needs to be referred to the surgery. Pharmacists are sometimes asked for over-the-counter (OTC) *topical hydrocortisone* or *clobetasone* by patients on the recommendation of their doctor or nurse. It can be difficult to explain to a patient why such a sale cannot legally be made if the
product is for use on the face or anogenital area or for severe eczema. You can minimise such problems by ensuring that local family doctors (especially those in training) are aware of the restrictions that apply to the sale of *hydrocortisone* and *clobetasone* OTC.

History of hay fever/asthma

Many atopic eczema sufferers have associated hay fever and/or asthma. Most adults will have developed their first symptoms of eczema in the first 1–2 years of life (this is regarded as a diagnostic feature). There is often a family history (in about 80% of cases) of eczema, hay fever or asthma. You can ask about this.

Aggravating factors

Atopic eczema may be worse during the hay fever season and aggravated by house dust or animal dander. Emotional factors, stress and worry can sometimes exacerbate eczema. Hormonal changes in women are recognised aggravating factors or triggers. Among women who have atopic eczema, premenstrual flares occur in 30%, and pregnancy can adversely affect eczema in up to 50%. Factors that dry the skin, such as soaps or detergents and cold wind, can aggravate the condition. Certain clothing, such as woollen material, can irritate the skin. In a small minority of sufferers (<5%), cow's milk, eggs and food colouring (tartrazine) have been implicated. Antiseptic and antibacterial solutions applied directly to the skin or added to the bathwater can irritate the skin. Hand sanitiser

gels in frequent use because of coronavirus disease (COVID-19) may also be an aggravating factor.

Medication

Both atopic eczema and contact dermatitis may be caused or made worse by sensitisation to topical medicaments, so you should ask which treatments have already been used. Topically applied local anaesthetics, antihistamines, antibiotics and antiseptics can all aggravate eczema or provoke contact dermatitis. Some preservatives may cause sensitisation. *Lanolin* or its derivatives sometimes cause sensitisation, although newer hypoallergenic formulations of *lanolin* are less problematic. Information about different preparations and their formulations can be obtained from the Summary of Product Characteristics or from the manufacturer of the product. The *British National Formulary* (*BNF*) is also a good source of information on this subject, with a list of additives for each topical product and excipients that may be associated with sensitisation. If the patient has used a preparation that the pharmacist considers appropriate for the condition correctly but there has been no improvement or the condition has got worse, the patient should see the doctor.

Effect on quality of life

In addition to physical symptoms, eczema and its exacerbations can have a profound effect on a patient's quality of life. People living with eczema are at a higher risk of experiencing depression, anxiety and stress. Self-consciousness about the appearance of visibly affected skin, stares and comments impact on self-confidence. Sleep disturbed by itching also has a negative effect on the well-being.

When to refer:

- Evidence of infection (weeping, crusting, spreading)
- Sever condition: badly fissured/ cracked skin, bleeding.
- Failed medication
- No identifiable cause (unless previously diagnosed as eczema)
- No improvement after 1 week with topical corticosteroid

Treatment timescale

If no improvement has been noted after 1 week, referral to the general practitioner (GP) is advisable.

MANAGEMENT

Skin rashes tend, quite understandably, to cause anxiety. There is also a social stigma associated with skin disease. Many patients will have seen their doctor, and pharmacists are most likely to be involved when the diagnosis has already been made, or when the condition first presents but is very mild.
However, it is now recognised that many patients can self-treat mild-to- moderate eczema. As much of the management involves advice and, crucially, the regular and continued use of emollients, the pharmacist is in a good position to help, with short-term use of OTC topical corticosteroids where needed. Where the pharmacist is able to identify a cause of irritant or allergic dermatitis, alongside removing or avoiding the cause, an OTC topical corticosteroid may be recommended.

Emollients

Emollients are the key to managing eczema and are medically inert creams and ointments that can be used to soothe the skin, reduce irritation, prevent the skin from drying, act as a protective layer and be used as a soap substitute. Most contain no active ingredients. There are many different types of emollient preparations, including ointments, creams, gels, lotions and sprays, and they vary in their degree of greasiness. The greasiest preparations, such as white soft paraffin, are very effective, especially with very dry skin, but are messy and less pleasant to use than less greasy preparations. Patient preference is crucial and plays a major part in effective use of emollients. Patients will understandably not use a preparation they find unacceptable and may need to try several different emollients before they find one that suits them. They may need to have more than one product (e.g., for use as a moisturiser and for use as a soap substitute when washing or showering).
Emollient preparations contained in tubs should be removed with a clean spoon or spatula to reduce bacterial contamination of the contents from the fingers. For lotions, creams and gels, products with a pump dispenser reduce the risk of bacterial contamination. These preparations should be used as often as needed to keep the skin hydrated and moist and this may require several and frequent applications each day. Emollients containing active ingredients are not generally recommended because they increase the risk of skin reactions, but may have value in some people. Active ingredients include *urea*, which acts as a keratin softener and hydrating agent, and *lauromacrogols*, which have local anaesthetic properties and are also said to soothe and relieve itch. Some patients with eczema believe, incorrectly, that bathing will make their eczema worse. This is not the case, provided appropriate emollient products are used and standard soaps and perfumed bath products are avoided; bathing to remove skin debris and crusts may in fact be beneficial. Standard soaps, shampoos and shower gels have a drying effect on the skin and can make eczema worse. Emollients can be used instead of soap; either cream applied directly, or ointments dissolved in hot water make suitable soap substitutes.

Bath additives are an option for people with extensive areas of dry skin, but evidence to support their use is limited. Sodium lauryl sulfate (SLS) used to be a common ingredient of emollients, but it can irritate the skin and make eczema worse. Aqueous cream is now considered less suitable for use as it contains SLS.

ADVICE

This could include the identification of possible aggravating or precipitating factors. If the history is suggestive of an occupationally associated contact dermatitis, then referral is advisable. The doctor may in turn feel that referral to a dermatologist is appropriate. It is sometimes necessary for a specialist to perform patch testing to identify the cause of contact dermatitis. Further advice could be given regarding the use of ordinary soaps and detergents that tend to dry the skin and their alternatives (soap substitutes). If corticosteroid creams have been prescribed and emollients are to be used, the pharmacist is in a good position to check that the patient understands the way in which they should be used and to ensure adequate quantities are available. For many people, in order to stop eczema flaring up or returning, emollients should be thought of as indefinite treatment.

Topical corticosteroids

Hydrocortisone cream and ointment and *clobetasone* 0.05% can be sold OTC for a limited range of indications. Their steroid potency is classed as mild (*hydrocortisone*) or moderate (*clobetasone*). *Topical hydrocortisone* OTC is licensed for the treatment of irritant and allergic dermatitis, insect bites and mild-to- moderate eczema. OTC *hydrocortisone* is contraindicated where the skin is infected (e.g. athlete's foot or cold sores), in acne and on the face and anogenital areas. Children aged over 10 years and adults can be treated, and any course must not be longer than 1 week. Only OTC products of *topical hydrocortisone* can be used; dispensing packs may not be sold. *Topical clobetasone* 0.05% can be sold OTC for the short-term treatment and control of patches of eczema and dermatitis in people aged 12 years and over (used for <7 days). The indications include atopic eczema and primary irritant or allergic dermatitis and exclude seborrhoeic dermatitis.

OTC topical corticosteroids should not be used on the groin, breast fold, genitals, or between the toes because these are common sites of fungal infections; nor on the face, as they can cause perioral dermatitis and acneiform pustules (see Figure 4.3).

All should be used sparingly and explaining to patients the use of fingertip units is helpful. A fingertip unit is the amount of cream you can squeeze on to your fingertip from the tip to the first crease. Half a fingertip unit will cover a patch of skin the same size as the palm of the hand.

Antipruritics

Antipruritic preparations are sometimes helpful, although evidence of effectiveness is lacking. There is some evidence to support *ceramide*-containing emollients (*ceramides* are naturally occurring lipid molecules in the stratum

corneum that may help to prevent loss of skin moisture). *Lauromacrogols* are reputed to relieve itch.

FIGURE 4.3 A perioral dermatitis following withdrawal of the potent topical steroid that
had been wrongly used to treat seborrhoeic eczema

Urea may improve skin hydration. It can enhance the moisture-retaining ability of emollients, thereby improving their efficacy. Topical antihistamines should not be used, as these can cause sensitisation that will aggravate eczema. *Calamine* or *crotamiton* can be used in cream or lotion. A combination product containing *crotamiton* with *hydrocortisone* is available. Indications for use are the same as those for *topical hydrocortisone* for contact dermatitis (irritant or allergic), insect bites or stings and mild-to- moderate eczema. The same restrictions apply on use (see the heading 'Topical corticosteroids' in the earlier text).

Complementary therapies

Homeopathic remedies, herbal medicine, massage and food supplements (such as evening-primrose oil) have insufficient evidence to support their use in eczema. Chinese herbal medicines, sometimes used because they are viewed as more 'natural', have been associated with adverse effects and in some cases have been found to contain potent corticosteroids. Some herbal creams have been found to contain harmful bacteria, including methicillin-resistant *Staphylococcus aureus* (MRSA).

PRACTICAL POINTS

- Diet and eczema

Patients should not alter their diet unless under specialist advice.

ACNE

Acne (or acne vulgaris) involves blockage or inflammation of the hair follicles and accompanying sebaceous gland. An estimated 95% of all adolescents will experience some degree of acne and most self-treat, at least initially. Mild-to-moderate acne often responds well to correctly used OTC treatments. Acne has profound effects on patients' self-esteem. Even mild acne is seen as stigmatising for teenagers and acne can have profound psychosocial effects and be a source of depression and social isolation for some. Some people with acne feel that its

impact is not recognised by others, and some report that their acne is trivialised by healthcare professionals. A sympathetic response to requests for help, together with an invitation to return and report progress, can be as important as the treatment selected.

What you need to know

- Age
- Description
- Severity
- Affected areas
- Duration
- Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Age

Onset is usually at puberty and acne can persist for anything from a few months to several years until the late teens or early 20s. Acne is extremely rare in young children and babies, and any such cases should be referred for investigation, since an androgen-secreting (hormone-producing) tumour may be responsible. Sometimes, acne is seen later in life. Approximately 5% of women and 1% of men 25–40 years of age either continue to get acne lesions or develop acne (late-onset acne). Acne worsens just before or during menstruation in some women; this is thought to be due to changes in progesterone levels. For patients in whom acne begins later than the teenage years, other causes should be considered, including hyperandrogenism in women, drug therapy (such as combined hormonal contraception) and occupational factors. Oils and greases used at work can precipitate acne, and it would be worth asking about this.

Description

Hormonal changes during puberty, especially the production of androgens, are involved in the causation of acne in teenagers. Increased keratin and sebum production are important contributory factors; the increased amount of keratin leads to blockages of the follicles and the formation of microcomedones. A microcomedone can develop into a non-inflammatory lesion (comedone), which may be open (blackhead) or closed (whitehead), or into an inflammatory lesion (papule, pustule or nodule; see Figure 4.4).

It is thought that excess sebum causes an overgrowth of bacteria, particularly *Cutibacterium acnes* (previously known as *Propionibacterium acnes*), which sets off an inflammatory reaction and is involved in the development of inflammatory lesions. Acne can thus be non-inflammatory or inflammatory in nature.

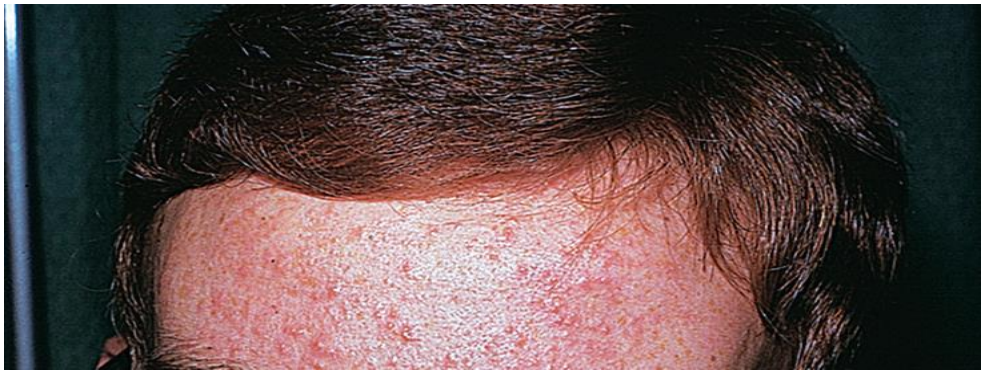

FIGURE 4.4 The seborrhoea, comedones and scattered inflammatory papules of teenage
acne.

Severity

Mild acne predominantly consists of non-inflammatory comedones. Moderate acne consists of a mixture of non-inflammatory comedones and inflammatory papules and pustules. Severe acne is characterised by the presence of widespread nodules and cysts, as well as a preponderance of inflammatory papules and pustules.

Comedones may be open or closed. The sebum in closed comedones cannot reach the surface of the skin. The plug of keratin, which is at the entrance to the follicle in a comedone, is initially white (a whitehead), later becoming darker coloured because of the accumulation of melanin (a blackhead). However, sebum is still produced, so swelling occurs and the comedone eventually ruptures, discharging its contents under the skin's surface. The released sebum causes an inflammatory response and small red papules and pustules appear. In severe acne the inflammatory reaction is more pronounced; nodules (deep pustular lesions) and cysts may occur, which may be red and tender. Scarring can result from these deep lesions, although sometimes superficial lesions can also cause scarring. If the acne is particularly inflamed, cystic or nodular with a risk of scarring, referral to the GP for alternative forms of treatment, such as topical or systemic antibiotics, is needed. Patients who are particularly distressed by what appears to be mild acne may also need referral for reassurance.

Affected areas

Acne principally affects the face, the upper back and shoulders (50%) and the chest (15%). These are all areas with large numbers of sebaceous glands. It is important to ask people who come to the pharmacy with acne on the face whether they also have it on these other areas; this may be embarrassing and tends to remain 'hidden', but can be effectively treated. Rosacea is a chronic, inflammatory skin condition that is sometimes confused with acne. It occurs in young and middle-aged adults and sometimes in older people (Figure 4.5). Only the face is affected. It can affect the cheeks, nose, eyes, chin and forehead. Rosacea has characteristic features of reddening, papules and pustules. It may be

associated with recurrent episodes of facial flushing and telangiectasia (broken capillaries).

Duration

The information gained here should be considered in conjunction with facts about medication (prescribed or OTC) tried already and other medicines being taken. Persistence with daily treatment over several months is usually required for beneficial effect. Acne of long duration where several OTC preparations have been correctly used without success warrants referral.

FIGURE 4.5 Typical appearance of rosacea in an older person

Medication

You should establish any treatment tried already and its method of use. Inappropriate use of medication, for example, infrequent application or short duration of use, could affect the chances of success. Acne can sometimes be drug-induced. *Lithium*, *phenytoin* and the progestogens *levonorgestrel* and *norethisterone* (e.g. in the combined oral contraceptive pill) may be culprits. If acne is suspected as a result of drug therapy, patients should be advised to discuss this with their doctor.

When to refer:

- Severe acne
- Failed medication
- Suspected drug-induced
- Considerable distress

Treatment timescale

A patient with mild to moderate acne that has not responded to treatment within 8 weeks should be referred to the doctor.

MANAGEMENT

OTC treatment may be recommended for mild-to- moderate acne. The general aims of therapy are to remove follicular plugs so that sebum can escape and to reduce the number of bacteria on the skin. Treatment should therefore reduce

comedone formation. The most useful formulations are lotions, creams and gels. Gels with an alcoholic base dry quickly, but can be irritating. Those with an aqueous base dry more slowly, but are less likely to irritate the skin. A non-comedogenic moisturiser can help if the skin becomes dry as a result of treatment.

Benzoyl peroxide

Benzoyl peroxide has both antibacterial and anti-comedone actions and is the first-line OTC treatment for inflammatory and non-inflammatory acne. It can be highly effective, but requires patience and careful, gradual increase in duration of use and product strength. Anti-inflammatory action occurs at all strengths. Its keratolytic action increases the turnover of skin cells, helping the skin to peel. Regular application

can result in improvement for most people with acne of all severities. Lack of knowledge about how best to use acne treatments together with occurrence of side effects is the main reason for patients not adhering to the recommended treatment.

Advice on using benzoyl peroxide:

• At first, *benzoyl peroxide* is very likely to produce reddening and soreness of the skin, and patients should be warned of this.

• Reddening and soreness can be minimised by beginning with the lowest strength preparation and to apply the cream, lotion or gel sparingly and infrequently during the first week of treatment.

• Wash off the application of *benzoyl peroxide* after 15 min initially, and increase exposure in increments of 15 min until the drug can be tolerated for 2 h or more.

• If irritant effects are severe and persist despite low strength and short exposure time, use of the product should be discontinued.

• Application is once or twice a day (once daily is usually sufficient) thereafter.

• Treatment should start with a 2.5% or 5% product. After 2 or 3 weeks, a higher strength preparation, such as that of 10%, may be introduced.

• Gels can be helpful for people with oily skin, and creams for those with dry skin.

• *Benzoyl peroxide* prevents new lesions forming rather than shrinking existing ones, so needs to be applied to the whole of the affected area, not just to individual comedones, and is best applied to skin following washing.

• Washing the skin with a mild soap or cleansing product, rinsed off with water and allowed to dry fully before applying *benzoyl peroxide,* can help by reducing the amount of sebum on the skin.

• Facial washes containing *benzoyl peroxide* should not be used while the patient is using another topical *benzoyl peroxide* preparation.

• *Benzoyl peroxide* increases the risk of sunburn. Avoidance of sunlight is not always possible, so the patient should use an appropriate sunscreen or protect treated skin on the chest and back by wearing a t-shirt.

• Occasionally, sensitisation to *benzoyl peroxide* may occur after a period of use. The skin becomes reddened, inflamed and sore, and treatment should be discontinued.
• Allergic contact dermatitis occurs in 1 in 500 users and should be suspected if the eyes become itchy and swollen.
• Warning should be given that *benzoyl peroxide* can bleach clothing and bedding. If it is applied at night, white sheets and pillowcases are best used and patients can be advised to wear an old t-shirt or shirt to minimise damage to good clothes.
• Contact between *benzoyl peroxide* and the eyes, mouth and other mucous membranes should be avoided.
Other keratolytics include *salicylic acid* and *potassium hydroxyquinoline sulfate*. They are second-line treatments.

Nicotinamide

Topical *nicotinamide gel* has a mild anti-inflammatory action and is applied twice daily. There is limited evidence of effectiveness. Side effects may include skin dryness and/or irritation. Several weeks' treatment may be needed to see the full effects.

Antiseptic agents

Skin washes and soaps containing antiseptic agents, such as *chlorhexidine*, are available. Such products may be useful in acne by degreasing the skin and reducing the skin flora. There is limited evidence of effectiveness.

Cosmeceuticals

Cosmeceuticals are intermediate products between licensed preparations containing medications and cosmetics. Preparations marketed for acne include those containing ceramides and retinols. There is insufficient evidence to support or refute their use.

PRACTICAL POINTS

General advice

All people with acne should be advised:
• To avoid over-cleaning, the skin (which may cause dryness and irritation) – acne is not caused by poor hygiene.
• To use non-comedogenic make-up and skincare products. Check for this wording on product labels and remove all traces of make-up before bed.
• That skincare preparations with a pH close to that of the skin (5.5) may be helpful.
• To avoid picking and squeezing spots and blackheads, as this may increase the risk of scarring.
• If dry skin is a problem, use a fragrance-free water-based moisturiser.

Diet

Patients should be encouraged to eat healthily. A common belief is that chocolate and fatty foods cause acne or make it worse and this has generally been considered untrue. The role of diet in acne remains poorly understood, but emerging data suggest that high glycaemic index (GI) diets (which may include sweets or chocolate) may exacerbate acne.

Antibiotics

The pharmacist is in a good position to ensure that acne treatments are used correctly as part of antimicrobial stewardship – if used efficiently, they may reduce the need for oral antibiotics.

Oral antibiotic therapy, available on prescription (i.e. prescription-only medicine [POM]), usually consists of tetracyclines. *Doxycycline* and *lymecycline* are most often used, as a once-daily dose is more convenient, and they can be taken with food, unlike *oxytetracycline*. *Doxycycline* causes increased sensitivity to sunlight and patients should be advised to use sunscreen. *Minocycline* should no longer be prescribed for acne as it is associated with severe adverse reactions and skin pigmentation. Tetracyclines are contraindicated in pregnancy, breastfeeding, and in children less than 12 years. The 2021 National Institute for Health and Care Excellence (NICE) Guideline on acne recommends that topical therapy (but not topical antibiotics such as clindamycin) should always be used as well when oral antibiotics are prescribed by GPs or skin specialists.

Erythromycin is also used in acne but tends to be used as second-line treatment. Bacterial resistance to *erythromycin* is now high, so it may not be effective.

Topical antibiotics (such as *clindamycin* 1%) are used as a treatment for mild-to-moderate acne, but they should always be prescribed in combination with *benzoyl peroxide* to prevent development of bacterial resistance.

Retinoids

Adapalene, *tretinoin* and *isotretinoin* are topical retinoids that are commonly prescribed by the doctor or skin specialist. They can cause skin irritation, particularly in people with eczema, but most importantly they are contraindicated in pregnancy. Retinoids are teratogenic and can damage the developing baby. NICE acne guideline in 2021 advised that when prescribed by GPs or skin specialists, fixed dose combination products should be used first-line e.g. *adapalene* with *benzoyl peroxide* or *tretinoin* with *clindamycin*.

Continuous treatment

Acne is notoriously slow to respond to treatment and a period of up to 6 months may be required for maximum benefit. It is generally agreed that keratolytics, such as *benzoyl peroxide*, require a minimum of 6–8 weeks' treatment for benefits to show.

Patients should therefore be encouraged to persevere with treatment, whether with OTC or prescription products, and told not to feel discouraged if results are not immediate. NICE 2021 acne guideline recommends that a trial of therapy should be for 12 weeks before changing to another treatment. Research has shown

that many teenagers have unrealistic expectations of the time needed for improvement to be seen, perhaps created by the advertising for some treatments. The patient also needs to understand that acne is a chronic condition and continuous treatment is needed to keep the problem under control.

Skin hygiene

Acne is not caused by poor hygiene or failure to wash the skin sufficiently often. This is a myth worth dispelling. Regular washing of the skin with soap and warm water or with an antibacterial soap or skin wash can be helpful, as it degreases the skin and reduces the number of bacteria present. However, the evidence for face cleansing in the management of acne is mostly from poor-quality studies. Since personal hygiene is a sensitive area, an initial enquiry about the kind of soap or wash currently being used might be a tactful way to introduce the subject. Dermabrasion with facial scrubs removes the outer layer of dead skin and must be done gently. There is no evidence of effectiveness of this approach in acne.

OTC topical corticosteroids and acne

The use of *hydrocortisone* or *clobetasone* (or any other corticosteroid) is contraindicated in acne because steroids can potentiate the effects of androgenic hormones on the sebaceous glands, hence making acne worse.

Make-up and skincare products

Heavy, oily foundations and moisturisers are likely to exacerbate acne because they are comedogenic. Formulations labelled 'non-comedogenic' are now widely used. If make-up is to be worn, then water-based, rather than oily, foundations are best, and they should be removed thoroughly at the end of the day.

COMMON FUNGAL INFECTIONS

Athlete's foot

Athlete's foot (tinea pedis) is a superficial fungal skin infection of the feet and toes. It is very common, and at any one time, around 15–25% of people are likely to have athlete's foot. The fungus that causes the disease thrives in warm, moist conditions. The spaces between the toes can provide a good growth environment. The problem is more common in men than in women and responds well to OTC treatment.

What you need to know

- ✓ Duration
- ✓ Appearance
- ✓ Severity
- ✓ Broken skin
- ✓ Soreness
- ✓ Secondary infection
- ✓ Location
- ✓ Previous history
- ✓ Medication

SIGNIFICANCE OF QUESTIONS AND ANSWERS

Duration

Considered together with its severity, a long-standing condition may need referral.

Appearance

Athlete's foot usually presents as itchy, flaky skin in the web spaces between the toes. The flakes or scales of skin become white and macerated and begin to peel off. Underneath the scales, the skin is usually reddened and may be itchy and sore. The skin may be dry and scaly or moist and weeping (see Figure 4.6). Less commonly, a 'moccasin type' occurs as well, which is characterised by a more diffuse scaling of skin involving the entire sole and side of the foot; sometimes this is associated with vesicles (blistering).

Severity

Athlete's foot is usually a mild fungal infection causing itching, but occasionally the skin between the toes becomes more macerated and broken, and deeper and painful fissures may develop. The skin may then become inflamed and sore. Once the skin is broken, there is the potential for secondary bacterial infection to develop. If there are indications of bacterial involvement, such as weeping, pus or yellow crusts, then referral to the doctor is needed.

Location

Classically, the toes are involved, the web space between the fourth and fifth toes being the most commonly affected. In the moccasin type, the infection may spread to the sole of the foot and to the sides and upper surface in some cases. This spread can alter the appearance of the condition and such cases are probably best referred to the GP surgery for further investigation. When other areas of the foot are involved, it can be confused with allergic dermatitis. However, in eczema or dermatitis, the spaces between the toes are usually spared, in contrast to athlete's foot.

FIGURE 4.6 Athlete's foot.

If the toenails appear to be involved, referral to the GP surgery may be necessary depending on how many toenails are affected and severity. Systemic antifungal treatment may be required to deal with infection of the nail bed where OTC treatment is not appropriate.

Previous history

Many people get recurrent athlete's foot. Ask about previous bouts and about the action taken. Any patient with diabetes who presents with athlete's foot is best referred to the doctor. People with diabetes may have impaired circulation or nerve supply to the feet and are more prone to secondary infections in addition to poorer healing of open wounds.

Medication

One or more topical treatments may have already been tried before the patient seeks advice from the pharmacist. Establish the identity of any treatment and the method of use. Treatment failure may occur simply because it was not continued for sufficiently long enough. However, if an appropriate antifungal product has been used correctly without remission of symptoms, the patient is best referred to the doctor, especially if the problem is of long duration (several weeks).

When to refer:

- Severe, affecting other parts of the foot
- Signs of bacterial infection
- Unresponsive to appropriate treatment
- Patients with diabetes
- Involvement of toenails

Treatment timescale

If athletes' foot has not responded to treatment within 2 weeks, patients should see their doctor.

MANAGEMENT

Most cases of athlete's foot are minor in nature and can be treated effectively by providing advice and with OTC products. People with fungal infection of the foot should be advised on measures to reduce the risk of transmission (e.g. not scratching affected skin and not going barefoot in public places) and good foot hygiene (e.g. keeping feet cool and dry, wearing cotton socks and washing socks regularly). It is not necessary to keep children away from school. Many OTC topical preparations are available for the treatment of athlete's foot. Formulations include creams, powders, solutions, sprays and paints. A systematic review of clinical evidence for fungal foot and skin infections compared topical allylamines (e.g. *terbinafine*), imidazoles (e.g. *clotrimazole*, *miconazole*, *econazole*, *ketoconazole* and *bifonazole*), *undecenoic acid* and *tolnaftate*. All are more

effective than placebo. Topical allylamines have been tested against topical azoles; cure rates were the same. However, *terbinafine* was more effective in preventing recurrence ('sustained cure'). *Terbinafine* and *ketoconazole* have a 1-week treatment period, which some patients may prefer. Pharmacists should instruct patients on how to use the treatment correctly and on other measures that can help to prevent recurrence (see the heading 'Practical points' in the following text). Regular application of the recommended product to clean, dry feet is essential, and treatment must be continued after symptoms have gone to ensure eradication of the fungus. Individual products state the length of treatment and generally advise use for 1–2 weeks after the disappearance of all signs of infection, as fungal spores may linger.

- ***Imidazoles*** (e.g. clotrimazole, miconazole)

Topical imidazoles can be used to treat many topical fungal infections, including athlete's foot. They have a wide spectrum of action and some have been shown to have both antifungal and some antibacterial activities. The latter is useful, as secondary infection can occur. The treatment should be applied two or three times daily. Formulations include creams, powders and sprays. *Miconazole*, *clotrimazole* and *ketoconazole* have occasionally been reported to cause mild irritation of the skin. *Ketoconazole* is for adults only.

- ***Terbinafine*** (adults only)

Terbinafine is available in cream, spray and gel formulations for patients 16 years of age and older, and also in solution form (single-dose treatment for use in people over 18 years of age). Their licensed indications and treatment schedules are shown in the table that follows. There is evidence that *terbinafine* is better than the azoles in preventing recurrence, so it will be useful where frequent bouts of athlete's foot are a problem. *Terbinafine* can cause redness, itching and stinging of the skin; contact with the eyes should be avoided.

Terbinafine preparations	Cream (16 years of age and over)	Spray (16 years of age and over)	Solution (18 years of age and over)	Gel (16 years of age and over)
Athlete's foot	Apply once or twice daily for 1 week	Apply once daily for 1 week	Apply once between the toes and to the soles and sides of the feet. Leave in contact for 24 h	Apply once daily for 1 week
Dhobi itch ('jock itch')	Apply once or twice daily for 1–2 weeks	Apply once daily for 1 week	–	Apply once daily for 1 week
Ringworm	–	Apply once daily for 1 week	–	Apply once daily for 1 week

- ***Tolnaftate***

Tolnaftate is available in powder, cream, aerosol and solution formulations and is effective against athlete's foot. It has antifungal, but not antibacterial, action, but evidence of efficacy is limited. It should be applied twice daily, and treatment should be continued for up to 6 weeks. *Tolnaftate* may sting slightly when applied to infected skin.

- **Undecenoates** (e.g. zinc undecylenate, undecylenate acid, methyl undecylenate and propyl undecylenate)

Undecylenate (*undecenoate*) is an antifungal agent, sometimes formulated with zinc salt to give additional astringent properties. There is some limited evidence that it is more effective than placebo for treating athlete's foot. Treatment should be continued for 4 weeks.

Topical corticosteroids and combination products

Hydrocortisone may be sold OTC for allergic and irritant dermatitis, insect bites or stings and mild-to- moderate eczema. *Clobetasone* skin preparations can be sold OTC for eczema and dermatitis. On their own they cannot be recommended for athlete's foot because, although they reduce inflammation, they do not deal with the fungal infection and might make it worse. Some combination products containing *hydrocortisone* together with an antifungal agent are available OTC for use in athlete's foot and candidal intertrigo (described as 'sweat rash' on some product packaging and information). These helps relieve itch while treating infection. Treatment is limited to 7 days.

PRACTICAL POINTS

Footwear

Sweating of the feet can produce the kind of hot, moist environment in which the fungus is able to grow. Shoes that are too tight and that are made of synthetic materials make it impossible for moisture to evaporate. Wearing leather shoes allows the skin to breathe. In summer, open-toed sandals can be helpful, and shoes should be left off where possible. The wearing of cotton socks can facilitate the evaporation of moisture, whereas nylon or other synthetic fibre socks will prevent this.

Foot hygiene

The feet should be washed and carefully and thoroughly dried, especially between the toes, before the antifungal preparation is applied.

Transmission of athlete's foot

Athlete's foot is easily transmitted and is thought to be acquired by walking barefoot, for example, on changing room floors in workplaces, schools and sports clubs.

There is no need to avoid sports, but wearing some form of footwear, such as rubber sandals, is advisable.

Prevention of reinfection

Care should be taken to ensure that shoes and socks are kept free of fungus. Socks should be changed and washed regularly. Shoes can be dusted with a fungicidal powder to eradicate the fungus. The use of a fungicidal dusting powder on the feet and in the shoes can be a useful prophylactic measure and can also help to absorb moisture and prevent maceration. Patients should be reminded to treat all shoes, since fungal spores may be present.

RINGWORM (TINEA)

Ringworm of the body (tinea corporis) is a fungal infection that occurs as a circular lesion that gradually spreads after beginning as a small red papule. Often there is only one lesion, and the characteristic appearance is of a central cleared area with a red circular advancing edge – hence, the name ringworm (Figure 4.7). They are usually acquired through direct contact with an infected person or animal (for example, dogs, cats, guinea pigs and cattle), although indirect contact, such as through clothing, sometimes occurs. Advice should be given to wash towels, clothes and bed linen frequently to eradicate the fungus. Topical imidazoles, such as *miconazole*, are effective treatments.

FIGURE 4.7 Typical ring-like appearance of tinea corporis

FIGURE 4.8 Tinea capitis.

Ringworm of the groin (tinea cruris) presents as an itchy red area in the genital region and often spreads to the inside of the thighs. It is thought to be caused by an individual transferring infection from feet (athlete's foot) or nails, by scratching. The problem is seen more in men than in women and is commonly known as 'jock itch' in the United States. People with the infection should be advised not to share towels and to wash them frequently. Wearing loose-fitting clothes made of cotton or a material designed to keep moisture away from the skin, and let things dry out, will also help. Treatment consists of topical antifungals; the use of powder formulations can be particularly valuable because they absorb perspiration. Ringworm of the scalp (tinea capitis) is most common in preadolescent children, although it can occur in adolescents and adults. It is important to refer suspected cases to the GP surgery. It is relatively rare, but in the past used to occur in epidemics in urban areas. There may be associated hair loss and affected hairs come out easily (see Figure 4.8). Children are usually referred to a specialist by the GP. Confirmation of the diagnosis is normally required by microscopy and culture of skin scrapings and hair before treatment. Treatment is with oral antifungals. Advice
should be to discard or disinfect things that might spread fungal spores to others (for example, hats, combs, pillows, blankets and scissors).

FUNGAL NAIL INFECTIONS (ONYCHOMYCOSIS)

Fungal nail infection (onychomycosis) is a common cause of deformed nails. It can involve any part of the nail: the nail plate, the nail bed or the root of the nail. The infection evolves slowly. As it evolves, the nail unit discolours, the nail plate distorts and the nail bed and adjacent tissue may thicken (see Figure 4.9). Figure 4.10 shows an onychomycotic nail. No treatment other than nail trimming may be appropriate for some people who are not bothered by the infected nail or who wish to avoid the possible adverse effects of drug treatment. However, others may be very distressed by the appearance of the nail or get discomfort.

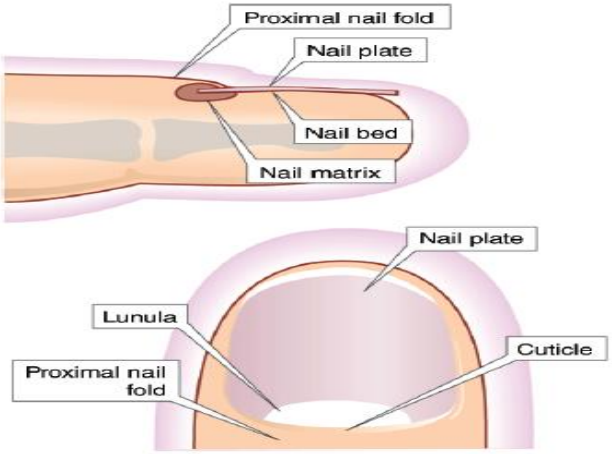

FIGURE 4.9 The nail.

An OTC nail lacquer containing 5% *amorolfine* can be used for the treatment of mild infection involving one or two nails in people aged over 18 years. The lacquer should be applied to the affected fingernails or toenails once weekly. Treatment length is 6 months for fingernails and 9–12 months for toenails. *Amorolfine* should not be used by pregnant or breastfeeding women. Reported adverse effects include nail discolouration and broken or brittle nails (these can also be effects of the infection itself). Rarely, a burning sensation of the skin is experienced, as is contact dermatitis from *amorolfine*. Refer if the infection seems severe and if walking is uncomfortable or if the abnormal-looking nails are causing significant psychological distress. Also refer where there is a predisposing condition, such as diabetes, peripheral circulatory problems and immunosuppression. In these instances, oral treatment may be indicated (usually *terbinafine*).

FIGURE 4.10 Tinea of a fingernail.

INTERTRIGO (CANDIDAL SKIN CREASE INFECTIONS)

Intertrigo (sometimes known as 'sweat rash') is an infection of the skinfolds in which the fungus, *Candida*, is usually implicated. These infections are more likely when skin rubs on skin (such as between skinfolds in an obese person) and where heat and moisture lead to maceration and inflammation. The diagnosis is usually made from characteristic features of a rash with soreness and itching in skin flexures, such as the groin, under the breasts, axillae and buttock folds. The affected skin is typically red and moist. As the condition develops, an irregular edge and blistering or papular satellite lesions may be present. Apart from obesity as a factor, it is important to consider an underlying cause if candidal infection of the skin is widespread or recurrent, and referral to the GP surgery for investigations and treatment may be required. Perhaps the most common association is with diabetes, particularly if glycaemic control is poor. Other commonly associated factors are the use of systemic corticosteroids or antibiotic treatment and diseases in which the barrier function of the skin is disturbed (such as psoriasis and eczema). Also consider the possibility of immunocompromise (such as human immunodeficiency virus [HIV] infection, chemotherapy and the

use of immunosuppressive drugs). Iron-deficiency anaemia is also associated with this condition. Offer advice about weight loss if obesity is a contributing factor. Advise the person to minimise skin occlusion where possible (for example, avoid tight clothing and non-breathable fabrics). Patients should wash skin regularly with a soap substitute emollient/moisturiser and ensure skin is dried adequately afterwards, especially in the skinfolds. If infection is not widespread, the pharmacist can treat adults with a topical imidazole cream (*clotrimazole*, *econazole*, *miconazole* or *ketoconazole*) or *terbinafine*. Children can be treated with topical *clotrimazole*, *econazole* or *miconazole*. If inflammation or itch is particularly problematic, consider prescribing *hydrocortisone* 1% combined with an imidazole. Do not give a corticosteroid preparation alone. If there is no improvement after 7 days, patients should be referred to the GP surgery.