Skin Conditions

Athlete’s foot

Cold sores

Warts and verrucae

Athlete’s foot

- The incidence of athlete’s foot (tinea paedis) is not, as its name might suggest, limited to those of an athletic disposition.
- The fungus that causes the disease thrives in warm, moist conditions.
- The spaces between the toes can provide a good growth environment and the infection therefore has a high incidence.
- 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

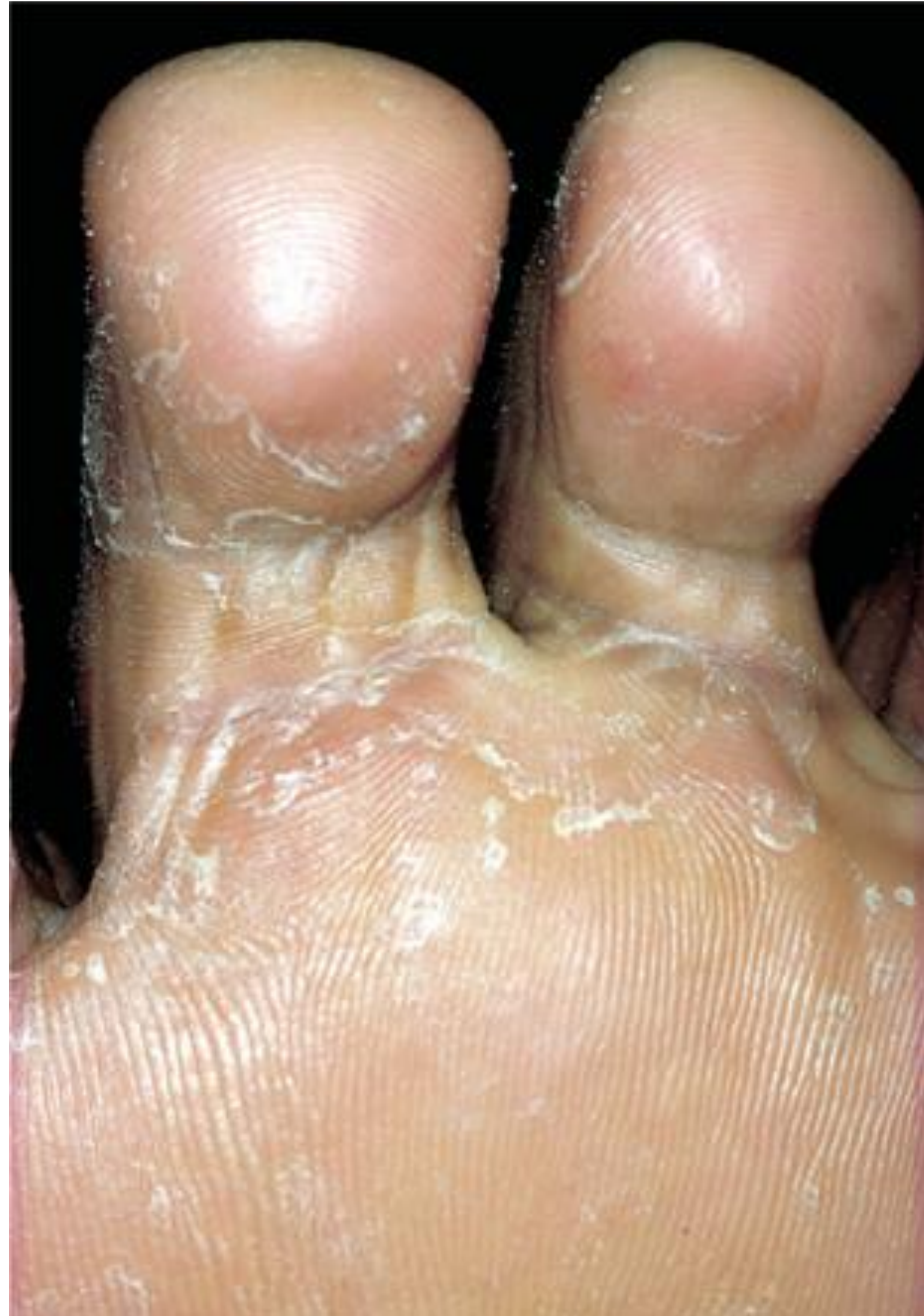
Duration

- Considered together with its severity, a long-standing condition may make the pharmacist decide to refer the patient.

- However, most cases of athlete's foot are minor in nature and can be treated effectively with OTC products.

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 Plate 4).



Severity

- Athlete's foot is usually a mild fungal infection, 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.
- More severe infections may spread to the sole of the foot and even to the upper surface in some cases.
- This type of spread can alter the appearance of the condition and severe cases are probably best referred to the doctor for further investigation.

- When other areas of the foot are involved, the appearance can be confused with that of allergic dermatitis.
- However, in eczema or dermatitis, the spaces between the toes are usually spared, in contrast to athlete's foot.
- If the toenails appear to be involved, referral to the doctor 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 occasionally suffer from athlete’s foot.
- The pharmacist should ask about previous bouts and about the action taken in response.
- Any diabetic patient who presents with athlete’s foot is best referred to the doctor.
- Diabetics may have impaired circulation or innervation of 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 been tried before the patient seeks advice from the pharmacist.

- The identity of any treatment and the method of use should be established.

- 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
Diabetic patients
Involvement of toenails

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

Management

- Many preparations are available for the treatment of athlete's foot.
- Formulations include creams, powders, solutions, sprays and paints.
- A systematic review of clinical evidence compared topical allylamines (e.g. *terbinafine*), azoles (e.g. *clotrimazole, miconazole, 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.
- *Terbinafine* and *ketoconazole* have a 1 week treatment period, which some patients may prefer.

Azoles (e.g. clotrimazole, miconazole)

- Topical azoles can be used to treat many topical fungal infections, including athlete's foot.
- They have a wide spectrum of action and have been shown to have both antifungal and antibacterial activity.
- (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, bifonazole* and *ketoconazole* have occasionally been reported to cause mild irritation of the skin.
- *Ketoconazole* has a 1 week treatment period.

- Pharmacists should instruct patients on how to use the treatment correctly and on other measures that can help to prevent recurrence

- 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.

Terbinafine

- *Terbinafine* is available as cream, solution, spray and gel formulations.

- 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* products are not recommended for use in children.

Terbinafine

	Cream (16 and over)	Spray (16 and over)	Solution (18 and over)	Gel (16 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

Griseofulvin

- *Griseofulvin 1% spray* can be used OTC for the treatment of athlete's foot.

- The spray is used once a day and the maximum treatment period is 4 weeks.

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. 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 undecenoate, undecenoic acid and methyl and propyl undecylenate)

- *Undecenoic acid* is an antifungal agent, sometimes formulated with zinc salt to give additional astringent properties.

- Treatment should be continued for 4 weeks.

Hydrocortisone cream or ointment

- *Hydrocortisone* may be sold OTC for allergic and irritant dermatitis, insect bites or stings and mild-to-moderate eczema.
- *Topical hydrocortisone* cannot be recommended in athlete's foot because, although it would reduce inflammation, used alone it would not deal with the fungal infection, which might then worsen.
- Combination products containing *hydrocortisone* together with an antifungal agent are, however, available OTC for use in athlete's foot and intertrigo (described as 'sweat rash' on product packaging and information). 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.
- If possible, the patient should wear leather shoes, which will allow 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 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.

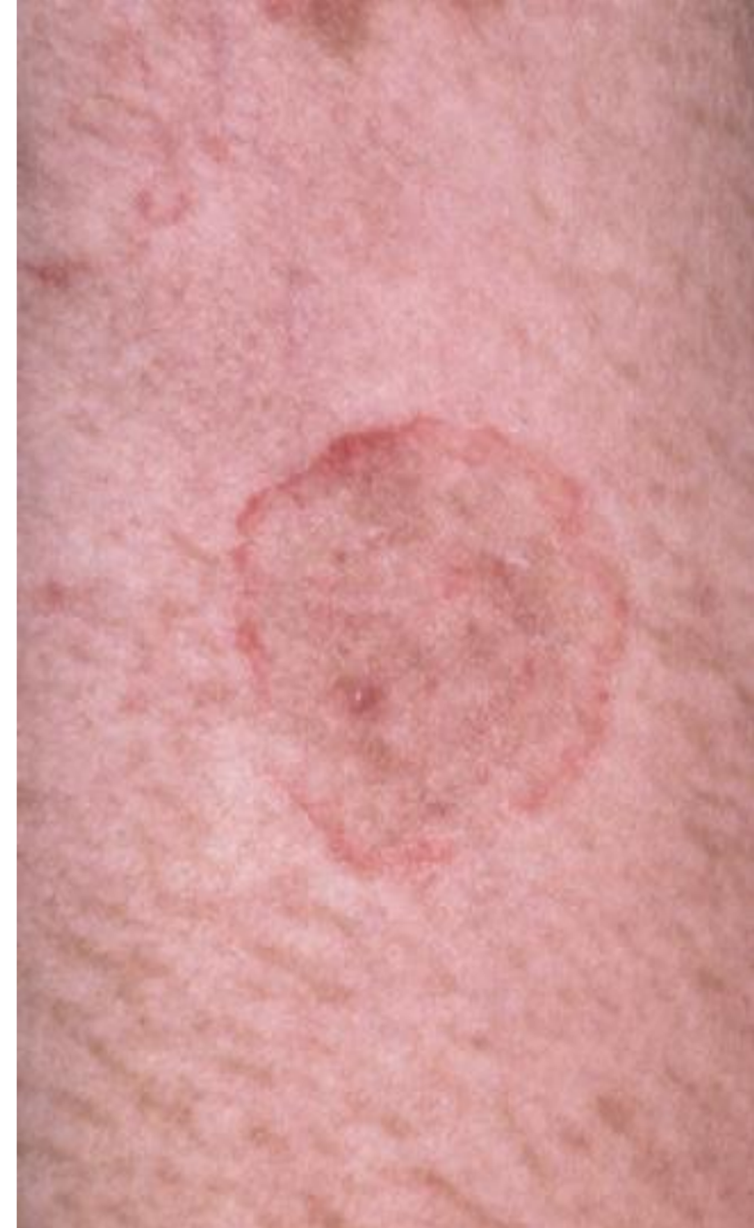
- There is no need to avoid sports but wearing some form of footwear, such as rubber sandals, is advisable.

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.

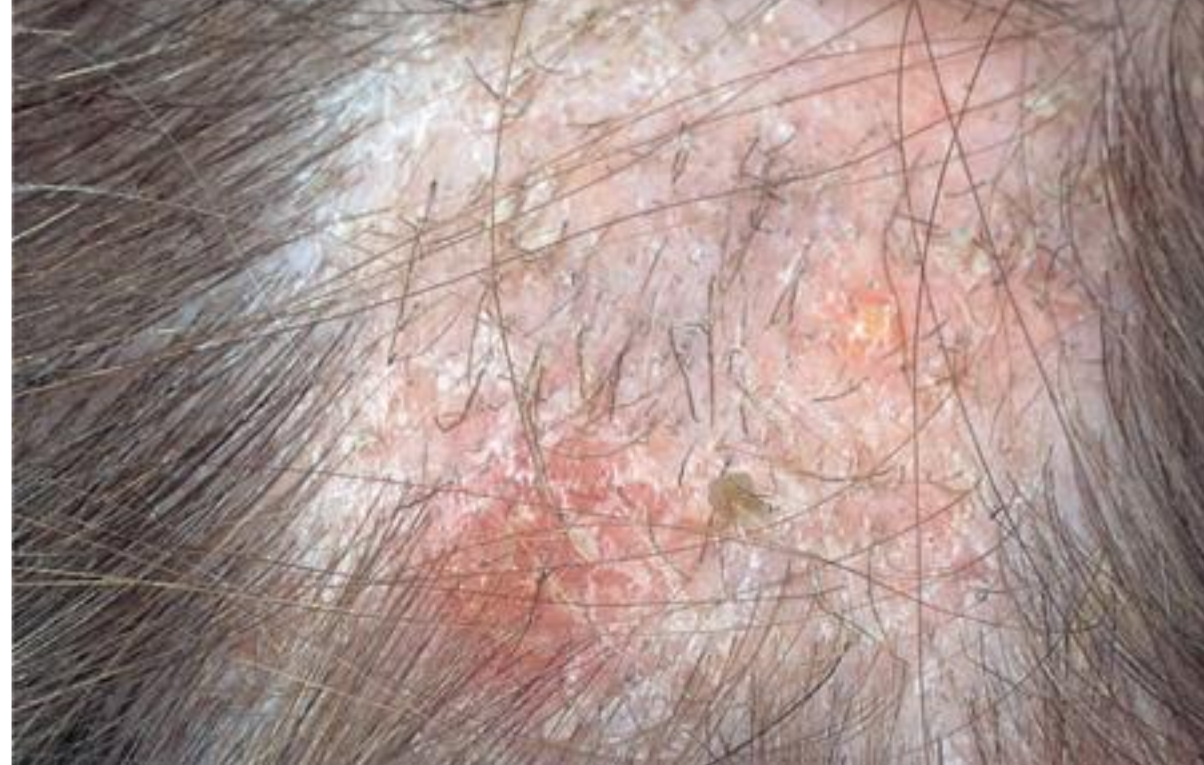
Ringworm

- Ringworm of the body (tinea corporis) is a fungal infection, which 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 advancing edge
- Topical azoles such as *miconazole* are effective treatments for ringworm.

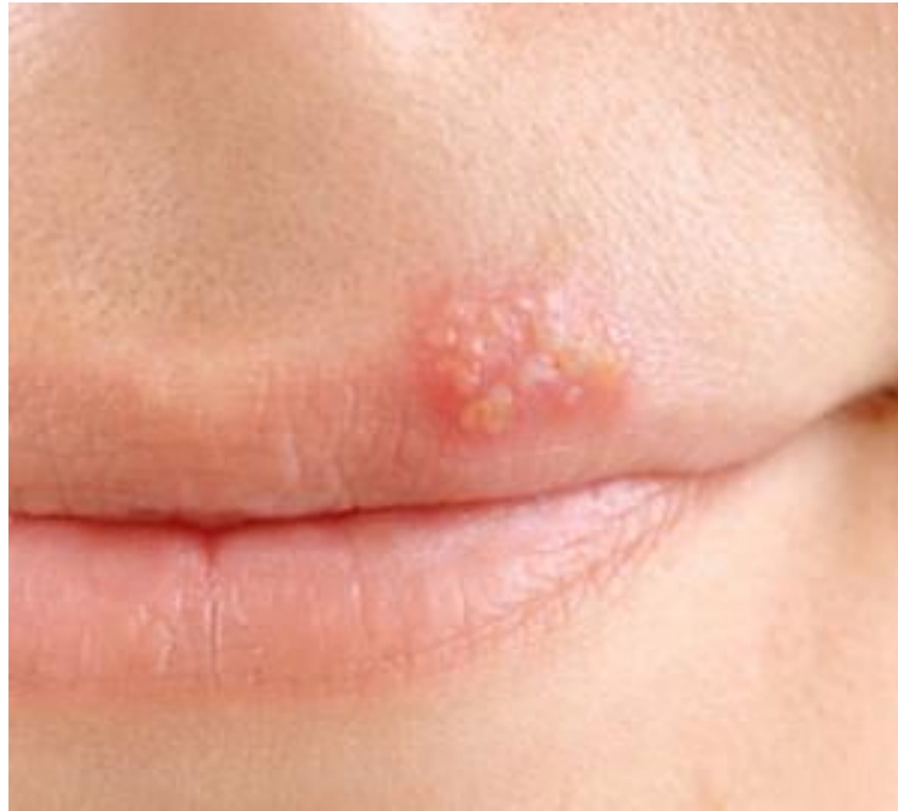


- Ringworm of the groin (tinea cruris) presents as an itchy red area in the genital region and often spreads to the inside of the thighs.
- The problem is more common in men than in women and is commonly known as jock itch in the United States.
- Treatment consists of topical antifungals; the use of 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.
- There may be associated hair loss and affected hairs come out easily
- Treatment is with oral antifungals and referral is required



- **Cold sores**



Cold sores

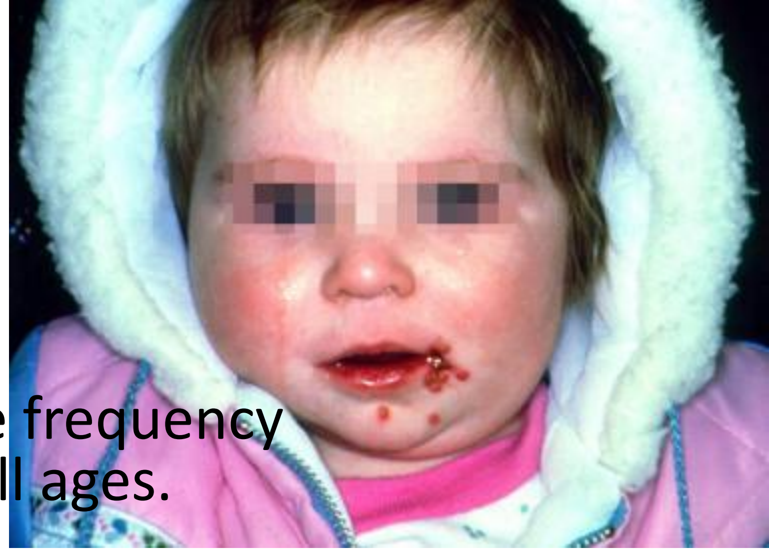
- Cold sores (herpes labialis) are caused by one of the most common viruses affecting humans worldwide.
- The virus responsible is the herpes simplex virus (HSV), of which there are two major types: HSV1 and HSV2.
- HSV1 typically causes infection around or in the mouth, whereas HSV2 is responsible for genital herpes infection.
- Occasionally, however, this situation is reversed with HSV2 affecting the face and HSV1 the genital area.

What you need to know

- Age
- Duration
- Symptoms and appearance
  - Tingling
  - Pain
- Location (current and previous)
- Precipitating factors
  - Sunlight
  - Infection
  - Stress
- Previous history
- Medication

Age

- Although initial infection, which is usually subclinical and goes unnoticed, occurs in childhood, cold sores are most commonly seen in adolescents and young adults.
- Following the primary attack, the virus is not completely eradicated and virus particles lie dormant in nerve roots until they are reactivated at a later stage.
- Although herpes infection is almost universal in childhood, not all those affected later experience cold sores, and the reason for this is not fully understood.



- Recurrent cold sores occur in up to 25% of all adults and the frequency declines with age, although cold sores occur in patients of all ages.
- The incidence of cold sores is slightly higher in women than in men.
- In active primary herpes infection of childhood, the typical picture is of a febrile child with a painful ulcerated mouth and enlarged lymph nodes.
- The herpetic lesions last for 3–6 days and can involve the outer skin surface as well as the inside of the mouth. Such patients should be referred to the doctor.

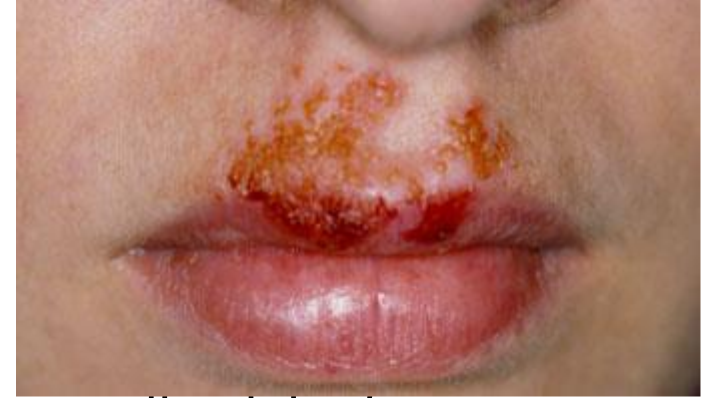
Duration

- The duration of the symptoms is important as treatment with *acyclovir* (*acyclovir*) is of most value if started early in the course of the infection (during the prodromal phase).
- Usually the infection is resolved within 1–2 weeks.
- Any lesions that have persisted longer need medical referral.

Symptoms and appearance

- The symptoms of discomfort, tingling or irritation (prodromal phase), may occur in the skin for 6–24 h before the appearance of the cold sore.
- The cold sore starts with the development of minute blisters on top of inflamed, red, raised skin.
- The blisters may be filled with white matter.
- They quickly break down to produce a raw area with exudation and crusting by about the fourth day after their appearance.
- By around 1 week later, most lesions will have healed.

- Cold sores are extremely painful and this is one of the critical diagnostic factors.
- Oral cancer can sometimes present a similar appearance to a cold sore.
- However, cancerous lesions are often painless and their long duration differentiates them from cold sores.
- Another cause of a painless ulcer is that of a primary oral chancre of syphilis.
- Chancres normally occur in the genital area but can be found on the lips.
- The incidence of syphilis has increased since 1997 in major cities in Europe, North America and Australia.



- When a cold sore occurs for the first time, it can be confused with a small patch of impetigo.
- Impetigo is usually more widespread, does not start with blisters and has a honey-coloured crust.
- Impetigo tends to spread out to form further patches and does not necessarily start close to the lips.
- It is less common than cold sores and tends to affect children.
- Since impetigo requires either topical or oral antibiotic treatment, the condition cannot be treated by the pharmacist.

Location

- Cold sores occur most often on the lips or face.
- Lesions inside the mouth or affecting the eye need medical referral.

Precipitating factors

- It is known that cold sores can be precipitated by sunlight, wind, fever (during infections such as colds and flu) and menstruation, being rundown and local trauma to the skin.

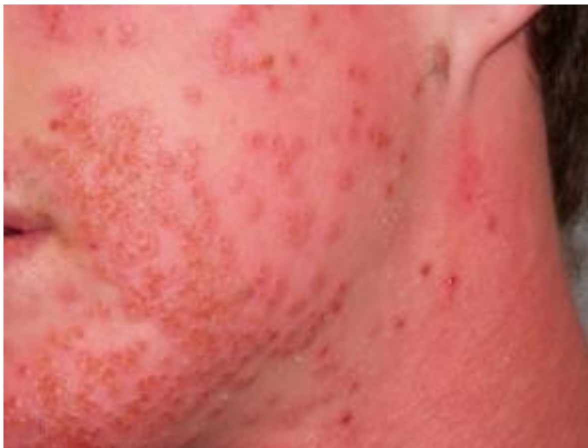
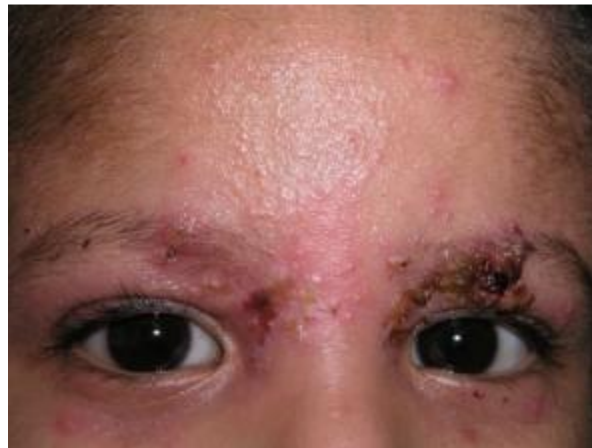
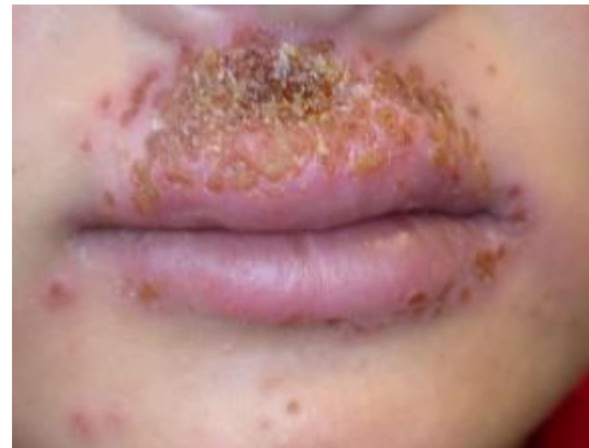
- Physical and emotional stress can also be triggers.

- Whilst it is often not possible to avoid these factors completely, the information is usually helpful for the sufferer.

Previous history

- The fact that the cold sore is recurrent is helpful diagnostically.
- If a sore keeps on returning in the same place in a similar way, then it is likely to be a cold sore.
- Most sufferers experience one to three attacks each year.
- Cold sores occur throughout the year, with a slightly increased incidence during the winter months.
- In patients with atopic eczema, herpes infections can be severe and widespread. Such patients must be referred to their doctor.

eczema herpeticum

Medication

- It is helpful to enquire what creams and lotions have been used so far,what was used in previous episodes and what, if anything, helped last time.
- Immunocompromised patients, for example, those undergoing cytotoxic chemotherapy, are at risk of serious infection and should always be referred to their doctor.

When to refer

- Babies and young children
- Failure of an established sore to resolve
- Severe or worsening sore
- History of frequent cold sores
- Sore lasting longer than 2 weeks
- Painless sore
- Patients with atopic eczema
- Eye affected
- Uncertain diagnosis
- Immunocompromised patient

Management

- **Aciclovir and penciclovir**
- *Aciclovir cream* and *penciclovir creams* are antivirals that reduce time to healing by one half to 1 day and reduce pain experienced from the lesion.
- Treatment should be started as soon as symptoms are felt and before the lesion appears. Once the lesion has appeared, evidence of effectiveness is less convincing.
- The treatments are therefore a helpful recommendation for patients who suffer repeated attacks and know when a cold sore is going to appear.

- *Aciclovir cream* can be used by adults and children and should be applied 4 hourly during waking hours (approximately five times a day) to the affected area for 5 days.

- If healing is not complete, treatment can be continued for up to 5 more days, after which medical advice should be sought if the cold sore has not resolved.

- *Penciclovir cream* can be used by those aged 12 years and over and is applied 2 hourly during waking hours (approximately eight times a day) for 4 days.

- Some patients experience a transient stinging or burning sensation after applying the creams. The affected skin may become dry and flaky.

Bland creams

- Keeping the cold sore moist will prevent drying and cracking, which might predispose to secondary bacterial infection.

- For the patient who suffers only an occasional cold sore, a simple cream, perhaps containing an antiseptic agent, can help to reduce discomfort.

Preventing cross infection

- Patients should be aware that HSV1 is contagious and transmitted by direct contact.
- Tell patients to wash their hands after applying treatment to the cold sore.
- Women should be careful in applying eye make-up when they have a cold sore to prevent infection affecting the eye.
- It is sensible not to share cutlery, towels, toothbrushes or face flannels until the cold sore has cleared up.

Use of sunscreens

- Sunscreen creams (SPF 15 or above) applied to and around the lips when patients are subject to increased sun exposure (e.g. during skiing and beach holidays) can be a useful preventive measure.

Stress

- Sources of stress in life could be looked at to see if changes are possible.

- **Patients with atopic eczema**

- are very susceptible to herpetic infection and show an abnormal response to the virus with widespread lesions and sometimes involvement of the central nervous system.

- These patients should avoid contact with anyone who has an active cold sore.

- **Warts and verrucae**

Warts and verrucae

- Warts and verrucae are caused by a viral infection of the skin and have a high incidence in schoolchildren.
- Once immunity to the infecting virus is sufficiently high, the lesions will disappear, but many patients and parents prefer active treatment for cosmetic reasons.
- Effective preparations are available OTC, but correct use is essential if damage to surrounding skin is to be minimized.

What you need to know

Age
- Adult, child

Appearance and number of lesions
Location
Duration and history
Medication

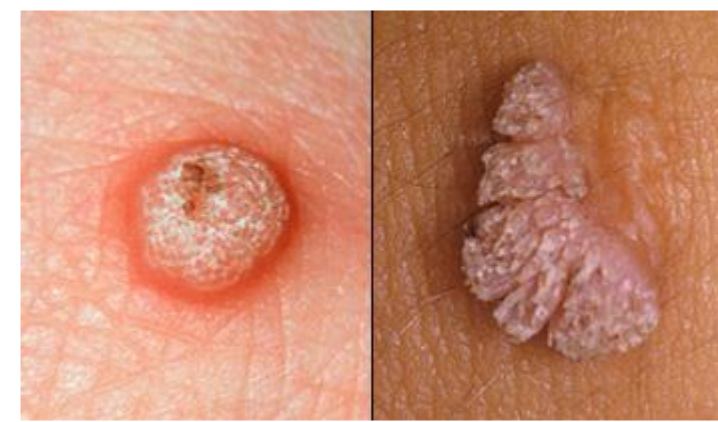
Age

- Warts can occur in children and adults;
- they are more common in children and the peak incidence is found between the ages of 12 and 16 years.

- The peak incidence is thought to be due to higher exposure to the virus in schools and sports facilities.

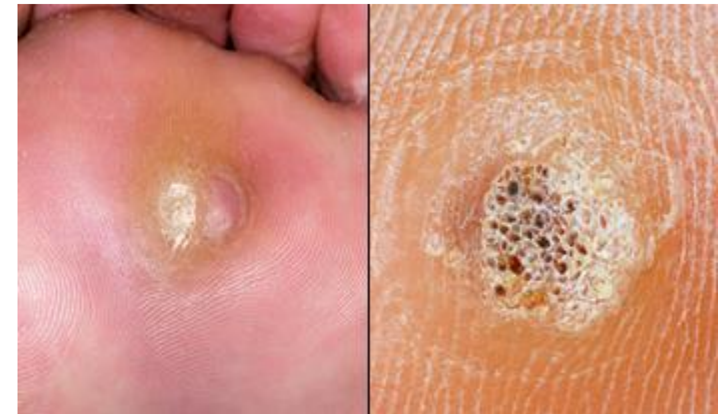
- Warts and verrucae both are caused by the human papilloma virus, differing in their location.

Appearance



- Warts appear as raised lesions with a roughened surface that are usually flesh coloured.

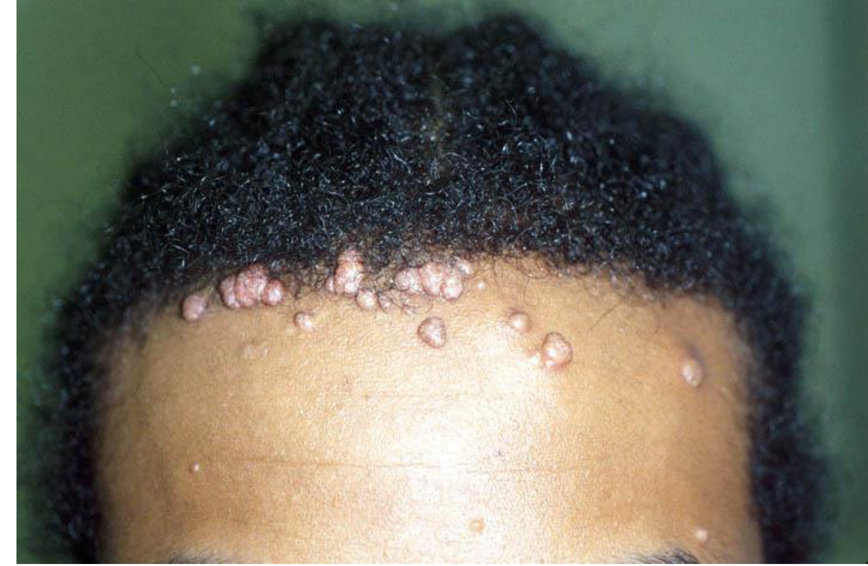
- Plantar warts occur on the weight-bearing areas of the sole and heel (verrucae).



- They have a different appearance from warts elsewhere on the body because the pressure from the body's weight pushes the lesion inwards, eventually producing pain when weight is applied during walking.

- Warts have a network of capillaries and, if pared, thrombosed, blackened capillaries or bleeding points will be seen.
- The presence of these capillaries provides a useful distinguishing feature between callouses and verrucae on the feet:
- if a corn or callous is pared, no such dark points will be seen; instead layers of white keratin will be present.
- The thrombosed capillaries are sometimes thought, incorrectly, to be the root of the verruca by the patient.
- The pharmacist can correct this misconception when explaining the purpose and method of treatment (discussed below).

Multiple warts



- Warts may occur singly or as several lesions.
- Molluscum contagiosum is a condition in which the lesions may resemble warts and where another type of viral infection is the cause.
- Closer examination shows that the lesions contain a central plug of material (consisting of viral particles), which can be removed by squeezing.
- The location of molluscum contagiosum tends to differ from that of warts – the eyelids, face, armpits and trunk may be involved. Such cases are best referred to the doctor, since self-treatment would be inappropriate.

Location

- The palms or backs of the hands are common sites for warts, as is the area around the fingernails.
- People who bite or pick their nails are more susceptible to warts around them.
- Warts sometimes occur on the face and referral to the doctor is the best option in such cases.
- Since treatment with OTC products is destructive in nature, self-treatment of facial warts can lead to scarring and should never be attempted.
- Parts of the skin that are subject to regular trauma or friction are more likely to be affected, since damage to the skin facilitates entry of the virus.
- Plantar warts (verrucae) are found on the sole of the foot and may be present singly or as several lesions.

Anogenital

- Anogenital warts are caused by a different type of human papilloma virus and require medical referral for examination, diagnosis and treatment.
- They are sexually transmitted and patients can self-refer to their local genitourinary clinic.

Duration and history

- It is known that most warts will disappear spontaneously within a period of 6 months to 2 years.
- The younger the patient, the more quickly the lesions are likely to remit.
- Any change in the appearance of a wart should be treated with suspicion and referral to the doctor is advised.
- Skin cancers are sometimes mistakenly thought to be warts by patients, and the pharmacist can establish how long the lesion has been present and any changes that have occurred.

Medication

- Diabetic patients should not use OTC products to treat warts or verrucae since impaired circulation can lead to delayed healing, ulceration or even gangrene.

- Peripheral neuropathymay mean that even extensive damage to the skin may not provoke a sensation of pain.

- Warts can be a major problem if the immune system is suppressed by either disease or drugs

- Commonly, treatments are not used for a sufficiently long period of time because patients' expectations are often of a fast cure.

When to refer

Changed appearance of lesions: size and colour
Bleeding
Itching
Genital warts
Facial warts
Immunocompromised patients

- **Treatment timescale**
- Treatment with OTC preparations should produce a successful outcome within 3 months; if not, referral is necessary.

Management

- Treatment of warts and verrucae aims to reduce the size of the lesion by gradual destruction of the skin.

- Continuous application of the selected preparation for several weeks or months may be needed and it is important to explain this to the patient if compliance with treatment is to be achieved.

- Surrounding healthy skin should be protected during treatment.

Salicylic acid

- *Salicylic acid may be considered to be the treatment of choice for* warts;
- it acts by softening and destroying the skin, thus mechanically removing infected tissue.
- Preparations are available in a variety of strengths, sometimes in collodion-type bases that help to retain the *salicylic acid in contact with the wart.*
- *Lactic acid is included in some* preparations with the aim of enhancing availability of the *salicylic acid. It is a keratolytic and has an antimicrobial effect.*
-

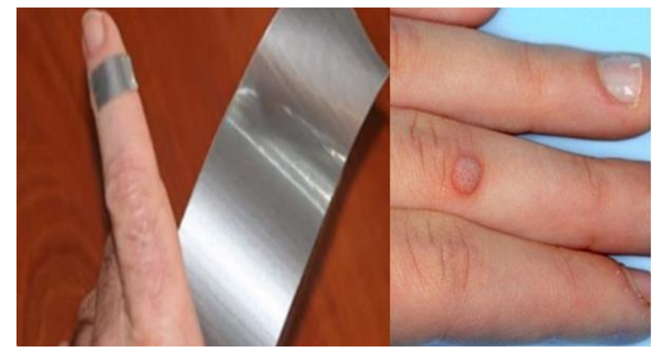
- *Ointments, gels* and plasters containing *salicylic acid provide a selection of methods of* application.

- Preparations should be kept well away from the eyes and
- applied with an orange stick or other applicator, not with the fingers.

Cryotherapy

- Dimethyl ether propane can be used to freeze warts and is available in an application system for home use for adults and children over 4.
- There is little evidence from which to judge its effectiveness in home use rather than when applied by a doctor.
- The treatment should not be used by people with diabetes or by pregnant women.
- The wart should fall off about 10 days after application.

Duct tape



- Application of a piece of duct tape to the wart has been widely used in the United States and little used in the United Kingdom.

- The tape is left in place for up to 6 days at a time after which the wart is soaked in warm water for 5 min and then gently abraded with an emery board.

- Treatment takes up to 8 weeks.

- A randomised controlled trial (RCT) comparing duct tape with OTC cryotherapy found similar effectiveness.

Formaldehyde

- *Formaldehyde is used for the treatment of verrucae; it is considered to* be less suitable for warts on the hands because of its irritant effect on the skin.
- The thicker skin layer on the sole of the feet protects against this irritant action.
- A gel formulation is available for the treatment of verrucae and is applied twice a day.
- Both *formaldehyde and glutaraldehyde* have an unpredictable action and are not first-line treatments for warts, though they may be useful in resistant cases.

Glutaraldehyde

- *Glutaraldehyde is used in a 5% or 10% gel or solution to treat warts;*
- it is not used for anogenital warts and is generally used for verrucae. Its

- Patients should be warned that *glutaraldehyde*
- will stain the skin brown, although this will fade after treatment
- has stopped.

Application of treatments

- Treatments containing *salicylic acid should be applied daily.*

- *The treatment* is helped by prior soaking of the affected hand or foot in warm water for 5–10 min to soften and hydrate the skin, increasing the action of the *salicylic acid.*

- *Removal of dead skin from the surface of the wart* by gentle rubbing with a pumice stone or emery board ensures that the next application reaches the surface of the lesion.

- Occlusion of the wart using an adhesive plaster helps to keep the skin macerated, maximising the effectiveness of *salicylic acid.*

- Protection of the surrounding skin is important and can be achieved by applying a layer of petroleum jelly to prevent the treatment from making contact with healthy skin.

- Application of the liquid or gel using an orange stick will help to confine the substance to the lesion itself.

Warts and skin cancer

- Premalignant and malignant lesions can sometimes be thought to be warts by the patient.

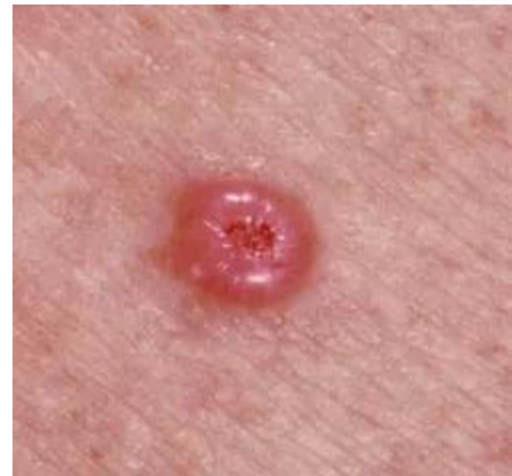
- There are different types of skin cancer.

- They can be divided into two categories:
  - non-pigmented (i.e. skin-coloured) and
  - pigmented (i.e. brown).

Non-pigmented

- *In this group, which is more likely to occur in the* elderly, the signs might include a persisting small ulcer or sore that slowly enlarges but never seems to heal.

- Sometimes a crust forms but when it falls off, the lesion is still present. In the case of a basal cell carcinoma (rodent ulcer), the lesion typically has a circular, raised and rolled edge.



Pigmented

- *Pigmented lesions or moles can turn malignant.*
- *These can* occur in patients of a much younger age than the first group.
- Changes in nature or appearance of pigmented skin lesions that warrant referral for further investigation include:

1. Increase in size
2. Irregular outline (surface and edge)
3. Colour change, especially to black
4. Itching or bleeding
5. Satellite lesions (near main lesion)

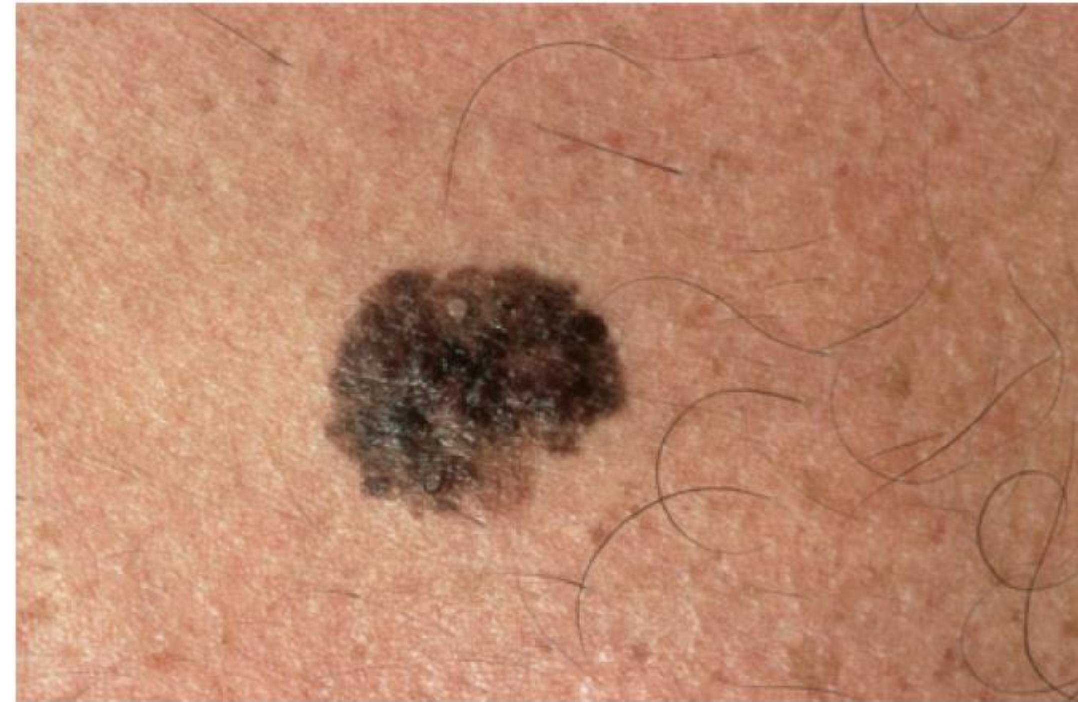
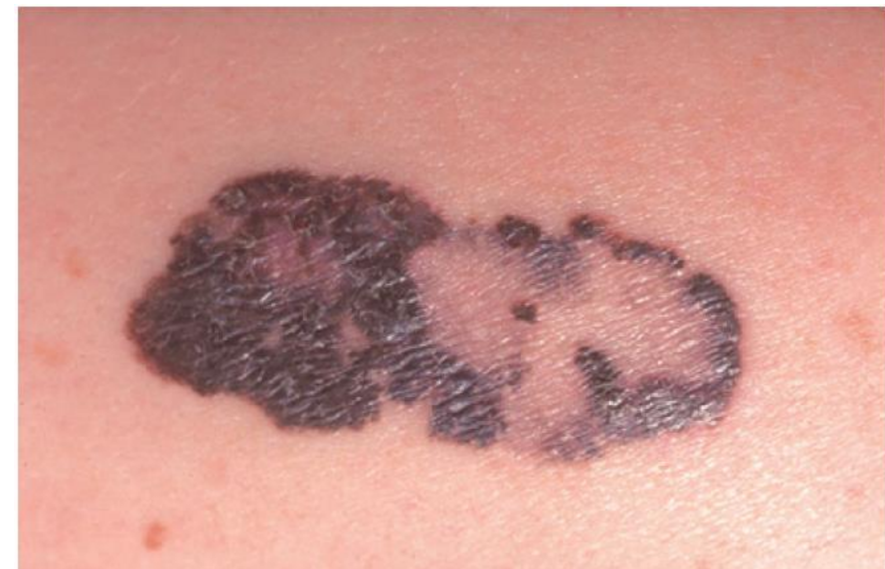


Plate 9 Malignant melanoma.



Length of treatment required

- Several weeks' continuous treatment is usually needed up to 3 months for both warts and verrucae.
- Patients need to know that a long period of treatment will be required and that they should not expect instant or rapid success.
- If treatment has not been successful after 3 months, referral for removal using liquid nitrogen may be required.