Identifying common skin infections and infestations

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As community nurses increasingly visit patients in their own homes to perform wound care, continence care or other common community nursing tasks, they may notice various skin conditions in the course of examining or treating patients. In order to provide holistic care, it is important that community nurses have a working knowledge of the variety of infections and infestations that can affect an individual’s skin. This article takes a look at some of the more common skin infections/infestations — impetigo, fungal infections, viral warts, and scabies — and provides information on presentation, assessment and treatment.

**KEYWORDS:** Skin care ■ Impetigo ■ Scabies ■ Fungal infections ■ Viral warts

Skin infections and infestations are commonly seen in all care settings and span all age groups. For this reason, it is vital that community nurses have a working knowledge of these types of infections and what to do if they come across them. This paper will discuss different types of infections and infestations, as well as the causes, diagnoses and management, while signposting readers to additional guidance and resources which can be used to support practice.

The author focuses on some of the more common skin infections and/or infestations, including:
- Impetigo
- Fungal infections
- Viral warts
- Scabies.

**IMPETIGO**

**What is Impetigo?**

Impetigo is a highly contagious superficial bacterial skin infection usually transmitted by direct contact. It is classified as either:

Primary impetigo: when there is direct bacterial invasion of minor breaks in normal skin

Secondary impetigo: where the infection is secondary to an underlying skin disease, such as eczema and scabies (Koning et al, 2012), or develops as a result of trauma to the skin from burns, bites or lacerations (Fitzpatrick et al, 2001).

There are two types of impetigo, non-bullous and bullous (bullous means to be characterised by blisters or bullae).

**Non-bullous impetigo**

Non-bullous (impetigo contagiosa or crusted impetigo) is the most common form, accounting for three-quarters of cases, with *Staphylococcus aureus* being the main cause. *Streptococcus pyogenes* is implicated in fewer cases, which develop either due to *S. pyogenes* alone or in combination with *S. aureus* and bullous impetigo (National Institute for Health and Care Excellence [NICE], 2013a).

**Bullous impetigo**

Bullous impetigo is always caused by *S. aureus* (Cole and Gazewood, 2007; Koning et al, 2012).

**Who gets it?**

Impetigo is frequently seen in children — although adults can contract it — with an annual incidence of around 2.8% in children (Cole and Gazewood, 2007; Koning et al, 2012).

**THE SCIENCE — HOW DOES THE SKIN BECOME INFECTED?**

Skin infections such as impetigo occur when bacteria (such as *Staphylococcus*) access a break in the skin, such as a cut or crack in dry skin. This results in symptoms such as boils or abscesses — pus-filled lumps on the surface or just under the skin, which are often painful. This in turn can lead to a crust on the skin (impetigo), or redness, swelling and pain in the underlying tissue (cellulitis). If these conditions are not treated, invasive infections can develop, which have more severe and wide-ranging symptoms including fever, low blood pressure, confusion and shortness of breath.

Source: www.nhs.uk
children between 5–15 years of age (NICE, 2013a).

**What does it look like?**

Non-bullous impetigo vesicles (small fluid-filled blisters) or pustules (Figure 1) commonly present around the mouth and nose, although other areas of the face and the extremities may be involved. These lesions rapidly burst and develop into gold-crusted plaques, typically 2cm in diameter (these have been described as resembling glued-on cornflakes). Satellite lesions may also occur due to autoinoculation (self-infection) (NICE, 2013a).

Bullous impetigo is characterised by flaccid, fluid-filled vesicles and blisters (bullae), between 1–2cm in diameter. When these rupture they leave the skin raw and form thin flat, brown-to-golden crusts. The lesions are multiple and spread rapidly. They are also painful and the patient may develop systemic symptoms (weakness, fever, and diarrhoea), and lymphadenopathy (swelling of the lymph nodes).

Bullous impetigo less commonly affects the face, more often developing on the axilla (underarm), neck folds and ‘nappy’ area (NICE, 2013a).

**What tests should be done?**

Skin swabs are not necessary to diagnose impetigo. Instead, swabs should only be used to identify the bacteria involved and its sensitivity to antibiotics if the infection is (NICE, 2013a):

- Very extensive or severe
- Recurrent, in which case a nasal swab for Staphylococcal carriage could be considered (nasal carriage of *S. aureus* is a known risk factor for skin infections)
- Suspected as being a community outbreak
- Suspected as being caused by meticillin-resistant *S. aureus* (MRSA).

**How is impetigo treated?**

Localised non-bullous impetigo should be treated with topical fusidic acid (three to four times daily, for seven days (eMC, 2013) and before it is applied the crusts of any plaques should be removed by soaking them in soapy water (as long as this does not cause discomfort). Removal of the crust allows the antibiotic to come into direct contact with the bacteria rather than being wasted on dry, exfoliating skin (Watkins, 2005).

Topical antibiotics (mupirocin and retapamin) are not recommended as a first-choice treatment; neither are topical antiseptics as there is a lack of evidence to support their efficacy (Koning et al, 2012).

If the impetigo is bullous, extensive, or severe with systemic symptoms, oral antibiotics are the first-choice treatment (NICE, 2013a).

**Complications**

The infection may spread locally and systemically, resulting in cellulitis (infection of the deeper layers of the skin and the underlying tissue), lymphangitis (inflammation of the lymphatic system), or septicemia (invasion of bacteria into the bloodstream).

Non-infectious complications of *S. pyogenes* infection include guttate psoriasis (an acute skin eruption), scarlet fever and glomerulonephritis (an inflammation of the kidney that can lead to kidney failure) (Koning et al, 2012).

More rarely, exotoxins (toxins secreted by bacteria) produced by some strains of *S. aureus* may result in staphylococcal toxic shock syndrome or staphylococcal scalded skin syndrome (SSSS) (results in widespread formation of fluid filled blisters) (DermNet NZ, 2013a).

**FUNGAL INFECTIONS**

**What are fungal infections?**

Fungal infections of the skin (tinea) are caused by dermatophytes or fungi that require keratin for growth — keratin being the key structural component of the outer layer of human skin, hair and nails.

Fungal infections can be acquired from three sources (Fitzpatrick et al, 2001; NICE, 2013b):

- Anthropophilic: person-to-person transmission by fomites (any object or substance that can carry infectious organisms) and direct contact
- Zoophilic: direct animal-to-human contact
- Geophilic: contact with the environment (soil), though this is rare.

There are three genera of dermatophyte:

- *Trichophyton*
- *Microsporum*
- *Epidermophyton*.

The most common organism in the UK is *Trichophyton rubrum*, which colonises layers of dead skin and is the most common cause of conditions such as athlete’s foot, fungal infections of the nails and ringworm. The exception is the scalp, where *Trichophyton tonsurans* and *Microsporum canis* predominate (Primary Care Dermatology Society [PCDS], 2013).

**What does it look like and who gets it?**

On the body, the rash typically presents as one or more red or pink
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Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard. Adverse events should also be reported to Dermal.

www.dermal.co.uk

References:
infection of the nails, common in older people, but rare in children (Williams, 1993).

**What tests should be done?**

Skin, hair and nail samples (mycology) should be taken for microscopy and culture if the diagnosis is unclear, the infection has not responded to standard topical antifungals or oral anti-fungal treatment is being considered (NICE, 2013b).

**How is it treated?**

Topical anti-fungal treatments can be used where the infection is contained in one site and is of limited extent.

Oral anti-fungal treatments are used in hair and nail disease; where there are multiple sites involved; if the lesions are extensive; and where topical treatments have failed (Graham-Brown and Bourke, 1998).

**Complications**

Complications of fungal infection can include:

- **Cellulitis**
  - Patients with tinea capitis may experience kerion (painful, pustular, boggly mass on the scalp, and hair loss), which requires urgent referral (NICE, 2013c)
  - Tinea incognito: if a fungal infection is misdiagnosed as eczema and treated with a topical corticosteroid its appearance will be altered. The steroid cream may initially dampen down the inflammation and settle the symptoms of itch, however, when the cream is stopped these symptoms return — the more steroid cream is applied, the more extensive the fungal infection becomes.

**Referral**

Community nurses should consider a referral to a dermatology specialist/department if they are unsure of the diagnosis; there is no response to treatment; the infection is severe, extensive or recurrent; or if the patient is immunocompromised (NICE, 2013b).

**VIRAL WARTS**

**What are warts?**

Warts are small rough growths on any part of the body (of 1mm to over 1cm in diameter) which are caused by the human papilloma virus (HPV). They can appear anywhere on the skin but are most commonly seen on the hands and feet. A verruca (also known as a plantar wart) is a wart on the sole of the foot.

Warts are usually spread by direct skin-to-skin contact, or indirectly via contact with contaminated floors or surfaces (for example in swimming pools or communal washing areas). Infection is more likely to occur if the skin is damaged or wet.

In children, 50% of warts will disappear within six months — even without treatment — while 90% resolve within two years. They are more persistent in adults, but eventually clear up on their own. However, in immunosuppressed patients they can persist and almost never disappear despite treatment (NICE, 2009).

**Who gets them?**

Warts are common and most people will experience them at some point in their lives, although they are more common in children and adolescents.

**What do they look like?**

Warts have a hard, ‘verruccous’ surface. There is often a tiny black dot in the middle of each scaly spot, due to a thrombosed capillary blood vessel. There are various types of viral wart (DermNet NZ, 2013b):

- Common warts appear on the backs of fingers or toes, and on the knees
- Plantar warts (verruca)
- Mosaic warts develop on the sole of the foot and appear in clusters over an area, sometimes several centimetres in diameter
- Plane, or flat, warts
- Periungual warts develop at the sides or under the nails and can distort nail growth
- Filiform warts are characterised by a long ‘stalk’
- Oral warts can affect the lips and even the inside of the cheeks
- Genital warts.

**What tests should be done?**

Tests are rarely necessary to diagnose viral warts as they are so...
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common and have a characteristic appearance.

How are they treated?
As warts are not a serious problem, they are often left alone to resolve naturally. However, in some cases, they may be painful, look ugly and cause embarrassment. To remove them clinicians have to stimulate the body’s own immune system to attack the wart virus. This requires time and is dependent on the age, site and type of wart (DermNet NZ, 2013a), however, various techniques are available:

- Occlusion with duct tape (Nottingham Support Group for Carers of Children with Eczema [NSGCCE], 2014)
- Chemical applications of topical salicylic acid
- Cryotherapy (medical use of low temperatures).

Over-the-counter freeze sprays, glutaraldehyde (a solution used to sterilise medical and dental equipment), formaldehyde (chemical used as a disinfectant), and silver nitrate (a caustic chemical compound that destroys skin cells and is sometimes used to treat skin conditions) are not recommended (NICE, 2009).

Complications and referral
This is rarely necessary as warts can generally be managed in primary care, unless there is uncertainty about the diagnosis or the warts are multiple or recalcitrant (NICE, 2009).

SCABIES

What is scabies?
Scabies is an intensely itchy skin infestation caused by the human parasite *Sarcoptes scabiei* (or ‘itch mite’ [Figure 2]), which is transmitted from person-to-person via direct contact with the skin. As the itch and rash take 2–6 weeks to develop in a person who has been infested with scabies for the first time, people are often infectious before the rash develops (NICE, 2011).

Who gets it?
It is estimated that approximately 100 people per 100,000 of the population visit their GP with scabies each month in the UK. The prevalence is currently rising in the UK (due partly to asymptomatic carriage, drug resistance, and tourism from countries or districts with a higher incidence) and is highest in urban areas; in the north of the country; in children and women; and during the winter (Downs et al, 1999). Scabies is commonly seen in residential and nursing homes because of the close contact between residents and carers, but it can affect anyone irrespective of age or gender.

What does it look like?
The most common lesions caused by scabies are papules, vesicles, pustules, and nodules with evidence of ‘burrows’. These burrows may be seen with the naked eye (a magnifier is helpful) although they can be difficult to identify if the skin has been scratched or the person also has eczema. They commonly appear on the hands and wrists as fine, wavy, grey, dark or silvery lines with a minute speck (the mite) at the closed end. Burrows measure a few millimetres to 1.5cm. The point of entry of the mite — the most superficial part of the burrow — has a slightly scaly appearance, and at the distal end there may be a vesicle next to the mite. The presentation may differ according to the age of the host (NICE, 2011).

What tests should be done?
A diagnosis of scabies is usually made from the patient history and examination (including the use of magnification to identify the mites and burrows), as well as from the history of the family and any close contacts. Skin scrapings may be taken to look for the mite.

How is it treated?
Simultaneously (within 24 hours) all members of the household, close contacts, and sexual contacts should be treated with a topical insecticide (choice will be based on age, pregnancy and whether the patient is breastfeeding), even if they have no symptoms. Two applications of topical insecticide a week apart will be required. Any signs of infection should be treated and the patient told that the itching may take several weeks to settle.

Any clothes, towels and bed linen that has come into contact with those affected should be machine washed (at 50°C or above) on the day of application of the first treatment (NICE, 2011).

Complications
A secondary infection (such as impetigo) and/or a particularly severe form of scabies known as ‘crusted’ or ‘Norwegian’ scabies are two possible complications of scabies. In crusted scabies the increase in the number of mites (sometimes up to many thousands or millions) causes thick warty crusts to develop on the skin (NHS Choices, 2014).

CONCLUSION

Skin infections and infestations can be easily and effectively treated. Community nurses caring for patients and their families in a variety of settings will often be the first point of contact when patients present with these conditions and an understanding of the symptoms, assessment and treatments is important to ensure patients are educated, diagnosed and treated in a timely manner and before their quality of life and health is too severely affected.

REFERENCES

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KEY POINTS

- As community nurses increasingly visit patients in their own homes, they may notice various skin conditions in the course of examining or treating patients.

- It is important that community nurses have a working knowledge of the variety of infections and infestations that can affect an individual's skin.

- This article looks at some of the more common skin infections/infestations, including impetigo, fungal infections, viral warts, and scabies.

- It also provides information on presentation, assessment and treatment.

- An understanding of symptoms, assessment and treatment is important to ensure patients are educated, diagnosed and treated before their quality of life and health is too severely affected.

syndrome.html (accessed 20 January, 2014)