The skin is the largest organ in the body and has many functions (Box 1). The risk of skin damage increases with age as the epidermis thins and there is a reduction in the surface contact between the epidermis and dermis, leading to reduced exchange of nutrients and metabolites between the two layers (Nigam and Knight, 2008). This means that the skin is more likely to be damaged by shearing forces such as moving or dragging a person up a bed or up a chair.

The superficial layer of the skin, the stratum corneum, provides a protective barrier. If the stratum corneum breaks down, the barrier function for the skin is impaired and this is a risk factor associated with the development of moisture lesions (Hardy, 1996).

The effects of age on the physiology of skin, combined with incontinence in the older population, can lead to the skin becoming more vulnerable to damage.

One such damaging condition is incontinence dermatitis (ID), which is an irritant dermatitis, resulting in high moisture exposure, friction, bacterial and enzymatic activity. ID is a skin condition that affects people who are incontinent. It results in inflamed, excoriated, infected and damaged skin that causes pain and discomfort, as well as increasing the risk of pressure ulcers.

**INCONTINENCE AND OLDER PEOPLE**
The incidence of urinary incontinence rises with age: 31 per cent of older women and 23 per cent of older men are affected in the general population and between 30 per cent and 85 per cent of residents in nursing homes are incontinent (Bale et al., 2004). The incidence of faecal incontinence also rises with age, with around 12 per cent of older people affected (Goode et al., 2005).

Zimmaro et al. (2006) undertook a large study in the US and concluded that 3.4 per cent of incontinent older people had ID but it was unclear how common ID was among older people in acute hospitals.

**RISK FACTORS AND CAUSES**
Nazarko (2007) identified the main risk factors for ID as:

- Ageing;
- Urinary incontinence and faecal incontinence;
- Friction and shear during moving and handling;
- Impaired cognition;
- Skin problems;
- Diarrhoea;
- Poor quality of care.

Incontinence is one of the major risk factors for the development of skin breakdown. Copson (2006) notes that older people are at particular risk of developing ID. The condition is caused by several factors, such as changes in skin pH, wet soggy skin, damage to the skin caused by urine and faeces mixing and damage caused by faecal enzymes, such as proteolytic and lipolytic enzymes (Nazarko, 2007). When faeces and urine are mixed together, bacteria in the faeces convert urea in the urine to ammonia, which makes the skin more alkaline.
Normal skin has a pH of 5.5 and it should be maintained at this level of acidity. Its acid mantle inhibits the growth of bacteria.

Commercially available soaps and cleansers are alkaline, with pH of 9. When they are used to cleanse the skin following episodes of incontinence, the pH of the skin can become alkaline, stripping it of its acid mantle (Kirsner and Froelich, 1998).

The mixing of urine and faeces creates an alkaline skin pH and this problem is compounded by inappropriate use of cleansing solutions.

**PREVENTION STRATEGIES**

A tissue viability risk assessment should be carried out on all patients on admission to hospital and at regular intervals, depending on the results of the assessment and local policy.

Le Lievre (2001) focused guidance on the management of incontinence to prevent ID, including the use of urinary catheters, penile sheaths and pads. However, skin care is the single most important aspect in the prevention and treatment of the condition.

Patients with incontinence will have their skin washed several times a day and the products used must maintain the skin’s acid pH. Cooper (2000) reviewed the use of Clinisan, a foam cleanser, and found it to be more effective than soap and water in the prevention of ID. Copson (2006), in a paper published a few years later, also recommended using a foam cleanser.

Moisture must be donated to the skin in the process of skin cleansing and therefore a washing product that includes a moisturising agent is essential. Creams for the treatment of ID are usually either silicone-, titanium- or zinc-based and many nurses have their favourite, without necessarily knowing all the ingredients and when and where it is best to use them (Nazarko, 2007).

Hoggart et al (2005) conducted a controlled trial to investigate the barrier function and skin hydration properties of six skin protectants. They concluded that zinc oxide-based products showed good protection against irritant but poor skin hydration and barrier properties. Water-in-oil petrolatum-based products, such as Hydromol and Epaderm, performed the best.

We devised a simple strategy for the prevention and management of ID (Fig 1). This required ward staff to:

- Use only Hydromol or Epaderm in the treatment of ID. The ointment is mixed in a bowl with warm water, allowed to melt a little, then used to clean the skin;
- Spray the skin with a silicone-based barrier spray (Cavilon);
- Stop using any other cleanser, creams and lotions.

Hydromol and Epaderm are moisturisers that contain sodium pyrrolidone carboxylate as the main active ingredient. When sodium pyrrolidone carboxylate is applied to the skin it penetrates the stratum corneum, where it absorbs and retains water. This increases the capacity of the skin to hold moisture, and the skin becomes rehydrated. It also contains various other ingredients that have moisturising properties, such as isopropyl myristate and liquid paraffin, which provides a layer of oil on the surface of the skin. This helps prevent water from evaporating from the skin surface. Both actions soothe and soften the skin.

Moisturisers are essential for the treatment of ID, which becomes worse when the skin is allowed to dry out. They help restore the skin’s smoothness, softness and flexibility by helping the skin retain moisture if used regularly, particularly after bathing or showering.

Our trust’s pharmacy department has standardised and removed its other cleansers and creams from its medicine formulary. Since implementation of this guideline, referrals to tissue viability and continence service for ID have drastically reduced.

**FIG 1. STRATEGY FOR PREVENTING AND MANAGING ID**

- Do not use procedure pad (flat pads)
- Incontinence dermatitis
- Use appropriate incontinence pad
- Wash skin with Hydromol/Epaderm ointment mixed in warm water
- Spray Cavilon sparingly
- Pat dry

**Fig 2. THE PATIENT’S SKIN ON ADMISSION**

Catherine Hicks
CASE STUDY
This case study describes part of a patient’s care following an acute stroke, focusing on continence and tissue viability care, and demonstrates that the guideline resulted in an effective and positive patient outcome.

Mr Elliott* is 66 years old and lives alone. Over the past 12 months he noticed a gradual decline in his health and, one Saturday evening, as he was preparing to go to bed, he developed a severe headache, collapsed and woke to find himself unable to move. He remained on the floor over the weekend and was found by a relative on the Monday morning. An ambulance was called and Mr Elliott was admitted to hospital.

On arrival at the hospital he was stabilised and received acute medical interventions. He was then transferred to the stroke unit. The skin on Mr Elliott’s sacrum was assessed as extremely fragile and the tissue viability and continence advisers were asked to review his skin damage and continence needs.

It is estimated that 40–60 per cent of people admitted to hospital after a stroke can experience problems with urinary incontinence, with 25 per cent still having problems on discharge (Barrett, 2001).

The more severe the stroke, the greater the likelihood of urinary incontinence. Addressing the problems of this and skin care while patients are in hospital is fundamental to patients’ long-term quality of life.

Mr Elliott had to be able to weight bear, appreciate the need to void, initiate voiding at an appropriate place and time, communicate that desire to someone and motivate himself to remain continent.

These had proved to be impossible at home after he had had the stroke and, as a consequence, he developed severe ID as well as a pressure ulcer (Fig 2, p25).

The initial aim was to treat the ID. Damp skin caused by excessive moisture as a result of incontinence is at risk of losing its barrier function and thus making it more vulnerable to shearing forces. The aim was to limit the number of washes of the skin to prevent skin maceration and begin the process of healing.

The treatment was based on a three-stage approach:
- Treat the skin;
- Once the skin is healed, treat the pressure ulcer;
- Assess and treat the urinary incontinence.

A decision was made to insert a urinary catheter while the ID was treated. The urinary catheter was removed after six days and a continence assessment with the appropriate treatment was implemented with effective results.

Mr Elliott was discharged to a rehabilitation ward after three weeks in the acute hospital. He had no ID, his pressure ulcer was healing and he regained his normal bladder function.

* The patient’s name has been changed.

The skin guidelines (Fig 1, p25) were then followed. The skin was gently washed with Hydromol or Epaderm ointment “melted” into a bowl of warm water and was then sprayed with Cavilon.

After five days, the skin had recovered sufficiently for a dressing to be applied to the pressure ulcer (Fig 3).

The urinary catheter was removed after six days and a continence assessment with the appropriate treatment was implemented with effective results.

The urinary catheter was then removed after six days and a continence assessment was carried out.

The ID was being managed with the urinary catheter in situ, and the urinary catheter was removed after six days and the appropriate treatment was implemented with effective results.

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FIG 3. AFTER FIVE DAYS TREATMENT FOLLOWING THE SKIN GUIDELINES

CONCLUSION
This case study demonstrates that ID can be treated effectively with simple steps illustrated in our skin guidelines. Their implementation within the trust has resulted in a positive approach towards skin care and incontinence.

Adopting strategies such as evidence-based guidelines to aid practice is likely to enhance patient concordance with treatment and, most importantly, is likely to enhance the outcomes achieved by that treatment.

This case study won the ACA Dorothy Mandelstam award in 2009, which is sponsored by Bullen Healthcare. Information on the 2010 award can be found at www.aca.uk.com