Clinical Guidelines
a reference source for clinicians
Recommendations 2012
These guidelines are not intended as a guarantee of results, outcome or performance of the Skin IQ™ Microclimate Manager (MCM). They are recommendations to help clinicians establish treatment protocols for the use of Skin IQ™ MCM, in conjunction with a pressure redistribution surface, to help manage moisture and prevent pressure ulceration.

Note: Skin IQ™ MCM has specific indications, contraindications, safety information and instructions for use. Please consult product labelling and instructions before use. For instructions, compatibility and safety information specific to the bed mattress/frame, consult product labelling provided by the manufacturer.

Always consult the relevant section of this booklet and any other product labelling and instructions prior to initiating the Skin IQ™ MCM.

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Quick Reference

1. Connect power supply to fan
2. Pull coverlet tightly over corners
3. Smooth out wrinkles

Move hand to end of bed and feel fan vibration, listen for humming sound
4. Secure coverlet to bed frame

5. Connect power supply to power cord and move power supply under bed

6. Connect power cord to wall outlet
INTRODUCTION

This booklet discusses the importance of maintaining skin integrity in vulnerable patients at risk of pressure ulceration or moisture lesions. It considers the role of the Skin IQ™ Microclimate Manager (MCM) and offers simple guidelines for use.

MAINTAINING SKIN INTEGRITY

The skin is the largest organ of the body and provides an effective barrier between the internal tissues and the external environment (Flour, 2009). It protects the body from the effects of temperature, as well as chemical, physical and mechanical hazards and prevents harmful substances such as micro-organisms from entering the body. It also acts as a water resistant barrier so essential nutrients are not washed out of the body (DermNet NZ, 2012).

The structure of the skin varies depending on the anatomical region of the body and changes with ageing as a response to recurrent trauma/stressors and continued exposure to UV radiation.

The maintenance of skin integrity is critical for the prevention of pressure ulcers.

Maintaining skin integrity involves a balance of ensuring that external loads and forces on the skin are not damaging the skin as well as intrinsic factors such as the general health of the person and the ability of the skin to resist damage. In the past, there has been a focus on providing optimal support surfaces to patients at risk of pressure ulcer formation that reduce the mechanical load on the skin. There is now a need to consider interventions that affect the microclimate by modifying the environment at or near the skin surface (Wounds International, 2010).

What is a microclimate?

In wound care, microclimate is a term used to describe the interface between the skin and the surface with which it is in intimate contact. It refers, primarily to the temperature (of the skin or the soft tissues) and humidity (or skin surface moisture levels) (Clark and Black, 2011).

A poor microclimate that results in skin that is too warm and too moist reduces the resilience of the skin and increases its susceptibility to damage from pressure, shear or friction. Managing the skin microclimate* may involve controlling the general environment such as maintaining an optimum room temperature, avoiding the use of synthetic materials against the skin or using specific equipment to control the microclimate. This may include the warming devices used to prevent the tissues becoming too cold when patients have long periods in theatre (NICE, 2008) or specialist devices that keep the skin dry and at an optimum temperature (eg Skin IQ™ MCM) (Clark and Black, 2011).

Controlling the microclimate is very important for pressure ulcer prevention and treatment.

*Glossary of terms see page 19
STRUCTURE AND FUNCTION
The skin is a complicated structure, which is made up of three main layers: the epidermis, the dermis and subcutaneous tissue.

The skin performs the following functions:

- **Protection**: protects the body from mechanical or chemical damage and provides an anatomical barrier against infection (impervious to most microbes). Melanin in the epidermis screens out excess UV rays from the sun.

- **Sensation**: contains a variety of nerve endings that react to heat and cold, touch, pressure, vibration and tissue injury.

- **Thermoregulation**: contains a blood supply that allows precise control of energy loss by radiation, convection and conduction. Dilated blood vessels increase perfusion and heat loss, while constricted vessels reduce cutaneous blood flow and conserve heat.

- **Control of evaporation**: provides a relatively dry and semi-impermeable barrier to fluid loss. Loss of this function contributes to the massive fluid loss in burns.

- **Storage and synthesis**: acts as a storage centre for lipids and water, as well as a means of synthesis of vitamin D through exposure to UV radiation.

- **Excretion**: disposes of waste products such as urea and sodium chloride through sweating. This is at most a secondary function to temperature regulation.

- **Absorption**: acts as an important transport medium, for example medicine can be administered through the skin.

- **Water resistance**: acts as a water resistant barrier so essential nutrients cannot be washed out of the body.

- **Aesthetics and communication**: provides clues to a person’s emotional and physical state.
MAINTENANCE OF TEMPERATURE AND HYDRATION

The skin has a key role in regulating temperature and moisture.

Temperature

The body needs to maintain a constant temperature of 37°C and the skin is able to respond to temperature changes in a variety of ways.

Response to increased temperature

Arteries and veins in the subcutaneous layer immediately beneath the dermis are linked to small arterioles and capillaries that supply blood to the dermis. Blood flow can be varied by vasodilation and vasoconstriction. Vasodilation allows heat loss when the core temperature rises by four main processes:

- Convection — heat is lost to air currents, for example, when a fan is used to cool a patient
- Conduction — heat is lost to cooler solid objects that are in direct contact with the skin
- Radiation — heat from a warm body is lost to the cooler surrounding air
- Evaporation — heat is lost when liquid such as sweat evaporates.

Raised body and/or skin temperature often induces sweating, which serves an important role in temperature regulation, reducing body temperature.

Elevations in body temperature may lead to skin and soft tissue damage.

Response to reduced temperature

When the core temperature drops due to a cold external environment or poor health, the body is able to reduce the blood supply to the skin and therefore control the amount of heat lost. Warm air can also be trapped against the skin by the action of the arrector pili muscles. Shivering occurs when the body becomes cold. This involuntary muscle action throughout the body is a metabolic process which produces heat.

Hydration

Levels of skin hydration affect the efficiency of the skin barrier function and its ability to resist trauma/stressors.

The epidermis is made up of layers, with a basal layer that continually forms new cells. As new cells gradually move upwards toward the surface, they differentiate and become flattened and non-nucleated and fill with the tough waterproof protein keratin, forming the stratum corneum (outer horny layer). The keratin and oil from the sebaceous glands help to keep the skin hydrated and make it waterproof.

The stratum corneum is not totally impervious and allows passage of water vapour through the skin via transepidermal water loss (TEWL). The presence of fluid on the
1. ANATOMY AND PHYSIOLOGY OF SKIN

Skin, eg as a result of perspiration or incontinence, eventually leads to swelling and overhydration of the keratinocytes. Excessive moisture can weaken the cross links between the collagen in the dermis and soften the stratum corneum (Mayoritz et al, 2001). This can cause maceration or excoriation, for example incontinence-associated dermatitis if the liquid involved contains irritants from urine or faeces.

The skin may absorb up to five times its own weight from the surface and equally may absorb up to 75% of its own weight if occluded and TEWL is prevented (Cork, 1997).

Once the skin is overhydrated physiological changes occur that lead to a reduction in the skin’s smoothness, raising the friction coefficient and increasing the likelihood of skin damage from friction and shear stresses (Clark and Black, 2011). This can increase the risk of pressure ulceration.

CAUSES OF SKIN OVERHYDRATION
There are several common reasons for the skin to become overhydrated. These include:

- Increased temperature and increased sweating
- Urine trapped against the skin
- Wound exudate trapped against the skin
- Skin not being properly dried after washing
- Changes which occur at the end of life (Beldon, 2010).

Sweating
There are many causes for increased sweating. These include the patient being febrile, side effects of some drugs and extreme dyspnoea. Excessive sweating (diaphoresis) is commonly associated with shock and other medical emergency conditions.

Many bariatric patients often sweat profusely as the body attempts to control the temperature. Environmental causes of sweating must also be considered. Most hospital environments generally have a high ambient temperature, and the use of synthetic materials (eg mattresses and some support surfaces) against the patient’s skin can cause increased heat and sweating. Incontinence pads that have a plastic layer can also cause the patient to sweat.

Urine trapped against the skin
Skin breakdown can often occur in patients with faecal or urinary incontinence. Urinary incontinence occurs in a high number of people with an increased prevalence in women (Buckley et al, 2010). The use of some types of incontinence pads may trap the fluid against the skin and if not changed at the appropriate frequency can lead to both maceration and excoriation (see Appendix 2 for excoriation tool to assess the cause of the tissue damage).
Wound exudate trapped against the skin
If wound exudate is not managed correctly it can result in periwound skin changes, such as maceration and denudation (skin stripping or erosion) (Romanelli et al, 2010).

Appropriate dressing products can help to manage exudate effectively, but clinicians must understand how individual products work. Many newer products now use a combination of absorption and moisture vapour transfer (breathing away fluid) – the external environment therefore needs to support this activity as temperature and humidity affect the performance characteristics of these products (Lin et al, 2009).

Drying the skin properly
Consideration must be given to careful cleansing of the skin. The use of soap and water with towel drying should be avoided if possible as this changes the pH of the skin, strips the natural lipid coating because of the surfactants used in the soap, and may cause physical damage when rubbing the skin dry with a towel (Voegeli, 2008; Voegeli, 2012).

Patting dry with a towel may be equally detrimental as it does not sufficiently dry the skin and may cause maceration (Voegeli, 2008, Voegeli, 2012). More vigorous rubbing may cause damage to the skin. Where possible, air dry the skin or pat gently. Ensure the skin is completely dry before repositioning the patient.

It is recommended to use a neutral pH balanced soap as part of an effective skin care protocol.

Skin changes at the end of life
As people near the end of life it is widely accepted that changes occur to the skin. The disease processes associated with end of life frequently cause multiple problems. These may lead to skin that is clammy (moist) and vulnerable to damage from minor trauma (Sibbald et al, 2009).

A key strategy in the management of skin microclimate is control of the underlying cause of the extreme temperature and overhydration of the skin.
2. PRESSURE ULCERATION AND MOISTURE LESIONS

RISK ASSESSMENT AND CLASSIFICATION
In the past 10 years there has been a focus on differentiating between pressure-related damage and damage (particularly in the sacral region) caused primarily by moisture — this is described as a moisture lesion. Moisture lesions occur when moisture from sweat or incontinence is trapped against the skin. Some studies have focused on the application of absorbent dressings to remove the moisture. These have demonstrated good outcomes when combined with regular inspection of the skin (Thomas, 2008; Chaiken, 2012; Walsh et al, 2012).

To identify those at risk of developing a pressure ulcer or moisture lesion, it is recommended that clinicians undertake an appropriate risk assessment using a validated tool. The Braden risk assessment tool is particularly useful where moisture is an issue as it has a subscale that identifies the possible problems related to moisture (see below).

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</table>
| 1. | **Constantly Moist**  
Perspiration, urine, etc keep skin moist almost constantly. Dampness is detected every time the patient is moved or turned
| 2. | **Moist**  
Skin is often but not always moist. Linen must be changed at least once a shift
| 3. | **Occasionally Moist**  
Skin is occasionally moist, requiring an extra linen change approximately once a day

Where moisture is a factor, it is important to differentiate between pressure ulceration and moisture lesions (Beeckman et al, 2010).

The prevention and treatment of pressure ulcers and moisture lesions require different clinical interventions. Pressure ulcer classification is difficult (NPUAP/EPUAP, 2009) and differential diagnosis is based on visual inspection of the skin (Table 1). Where confusion exists between the two, this can result in misclassification and the use of suboptimal prevention and treatment strategies (Beeckman et al, 2010).
### Table 1: Pressure ulcer classification and IAD differentiation (adapted from EPUAP, 2005)

<table>
<thead>
<tr>
<th></th>
<th>Pressure ulcer</th>
<th>Incontinence-associated dermatitis (moisture lesions)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cause</strong></td>
<td>Pressure and/or shear must be evident</td>
<td>Moisture must be present (e.g., shining wet skin caused by urinary incontinence or diarrhoea)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>A wound over a bony prominence is likely to be a pressure ulcer</td>
<td>IAD may occur over a bony prominence. However, pressure and shear should be excluded as causes and moisture should be present</td>
</tr>
<tr>
<td><strong>Shape</strong></td>
<td>If the lesion is limited to one spot, it is likely to be a pressure ulcer</td>
<td>Diffuse, different superficial spots are more likely to be IAD</td>
</tr>
<tr>
<td><strong>Depth</strong></td>
<td>Partial thickness skin loss and full thickness skin loss</td>
<td>Superficial (partial thickness skin loss)</td>
</tr>
<tr>
<td><strong>Necrosis</strong></td>
<td>A black necrotic scab on a bony prominence is a category 3 or 4 pressure ulcer. If there is no or limited muscular mass underlying the necrosis, the lesion is a category 4 pressure ulcer.</td>
<td>No necrosis</td>
</tr>
<tr>
<td><strong>Edges</strong></td>
<td>Distinct edges</td>
<td>Diffuse or irregular edges</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>If redness is non-blanchable, this is most likely a category 1 pressure ulcer</td>
<td>Blanchable or non-blanchable erythema. Pink or white surrounding skin due to maceration</td>
</tr>
</tbody>
</table>

- Pressure ulcer presenting on the sacrum with slough in a wound located over a bony prominence
- Moisture lesion, with diffuse, irregular edges and shiny appearance indicative of incontinence
2. PRESSURE ULCERATION AND MOISTURE LESIONS

PREVENTING PRESSURE ULCERS
Successful pressure ulcer prevention depends on a complex balance between managing the external loads applied to the skin and maximising the intrinsic ability of the skin and soft tissues to withstand prolonged or excessive loading (Figure 1).

The inflammatory response initiated as part of initial loading can cause a rise in local skin temperature, which increases local metabolic demand and can further compromise the tissues (Clark and Black, 2011). It may also induce sweating leading to a high relative humidity causing maceration of the skin and makes it more susceptible to trauma (Clark and Black, 2011).

Controlling the microclimate is an important and often overlooked area of pressure ulcer prevention (Black, 2011). Extremes of skin temperature and/or humidity appear to increase the sensitivity of the skin to the damaging effects of pressure, shear and friction. The overall aim should be to avoid extremes of temperature or skin moisture and to enhance patient comfort.

When choosing a pressure redistribution surface it is important to take into account the patient’s needs, especially when determining the frequency of repositioning and positions used (Wounds International, 2010). The methods of pressure redistribution are shown in Figure 2.

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**Figure 1: Pressure damage and the balance between intrinsic and extrinsic factor. Reproduced with permission from Clark and Black (2011).**

- **No pressure damage** — the skin and tissues are able to withstand the external loads.
- **Pressure damage** — when loads increase and/or the ability of the skin to withstand them decreases, the balance changes (from left to right below) so that damage is more likely to occur.

**Extrinsic:** loading on tissues (pressure/shear/friction)

**Intrinsic:** resilience of the skin and soft tissues (tissue tolerance)
2. PRESSURE ULCERATION AND MOISTURE LESIONS

It should be noted that any surface that comes into contact with skin has the potential to alter the microclimate by changing the rate of evaporation of moisture and the rate at which heat dissipates from the skin. The overall effect on microclimate will be dependent on the nature of the pressure redistribution surface itself – what it is made from, how the material is conformed and what sort of cover it has (Wounds International, 2010).

Principles for maintaining skin integrity
When managing skin that is subject to moisture damage consideration should be given to a range of options to prevent damage occurring. These may include:

- Use of an appropriate surface to manage the microclimate
- Use of barrier creams and lotions to protect the skin from moisture and keep it well hydrated
- Use of thin waterproof dressings such as vapour permeable films or thin hydrocolloids, which can be applied to the area to act as a barrier to the skin. If the excess moisture is due to leakage from a very wet wound, the dressing will also act as a safe place to anchor adhesive dressings without the risk of stripping the skin (epidermal stripping) on dressing removal.
- Use of faecal management systems if the cause of moisture is profuse or prolonged diarrhoea.
The Skin IQ™ Microclimate Manager (Skin IQ™ MCM) is a mattress cover system that helps to reduce or maintain skin temperature while helping to prevent the build up of excess moisture or humidity of the skin surface. It is designed for use over a pressure redistribution surface. It is intended for single patient use and can be used in acute and post-acute care settings.

**The Skin IQ™ MCM has three layers:**
- The polyurethane-coated nylon top layer is fluid-proof, but vapour permeable and coated with an antimicrobial agent. It helps to reduce shear and friction at the point of contact with the skin.
- The middle layer is a foam layer of open cells that allows air to pass through without the layers collapsing.
- A fluid-resistant vapour permeable bottom layer that prevents the Skin IQ™ MCM moving over the surface of the pressure relieving mattress.

A negative pressure generated airflow device attaches to the foot end of the Skin IQ™ MCM and pulls air through the foam layer.

The system connects to the power supply and can be plugged in or disconnected.
**HOW DOES THE SKIN IQ™ MCM WORK?**
The pump pulls room temperature air and moisture vapour through the outer layer and into the foam spacer layer towards the foot of the bed. Air entry sites are located at the head of the bed, but air and water vapour can also enter the cover system via the vapour permeable cover.

The negative airflow provided also means that moisture and air are pulled away from areas where the skin is directly in contact with the support surfaces.

The **moisture vapour transfer rate** (MVTR) of the Skin IQ™ MCM top layer is reported to be 130g/m²/h (KCI Data on file), which is higher than the rate measured for low air loss (LAL) surfaces (average MVTR 97.7g/m²/h) (Wounds International, 2010). Pressure redistribution is provided by the underlying mattress and the Skin IQ™ MCM provides skin surface cooling, prevention of excessive moisture and reduced friction.

**Special features of the Skin IQ™ MCM**
- The Skin IQ™ MCM allows clinicians to manage skin temperature and moisture/humidity while using existing pressure redistributing mattresses. The low-friction surface helps to reduce shear.
- The Skin IQ™ MCM can be placed without having to move the patient from the bed.
- The Skin IQ™ MCM has a low profile (6.35mm). When placed on another surface it does not increase the overall height of the combined surfaces. Patient moving and handling, or the use of rails, are also not affected.
- The single patient use of each Skin IQ™ MCM is designed to prevent patient-to-patient cross-contamination.
3. THE SKIN IQ™ MICROCLIMATE MANAGER (MCM)

- There is evidence demonstrating that the top layer of the Skin IQ™ MCM provides a bacterial and viral barrier (KCI Data on file).
- Bench studies have shown that the negative airflow technology of the Skin IQ™ MCM can reduce odour at the skin/surface interface, when compared to the same surface without airflow (KCI Data on file).

**Indications:**
The Skin IQ™ MCM is indicated for use in conjunction with a pressure redistribution surface in order to aid in the prevention and treatment of skin breakdown and pressure ulcers (Stage/Category 1-4) for patients who require microclimate management of the skin.

**WHEN TO CONSIDER THE SKIN IQ™ MCM**
Clinicians should consider using the Skin IQ™ MCM as part of a holistic approach combined with an effective skin care protocol and pressure redistribution in vulnerable patients at increased risk of skin damage, including:

1. **Patients at risk of pressure ulcers** are frequently immobile. Where the skin is in contact with the support surface an initial inflammatory response occurs which causes localised heat and oedema. This may also result in localised sweating.

   In the case of patients at risk for pressure ulcer development, the management of all extrinsic risk factors like pressure, shear and friction is important. It is the healthcare provider’s responsibility to choose an appropriate pressure redistribution surface to use in combination with Skin IQ™ MCM and according to the risk profile of the patient.

2. **Incontinence** (especially if identified on the subscale of Braden — see page 6) can cause both maceration (from the fluid component) and excoriation from the irritant constituents. The risk of excoriation is much greater when patients are doubly incontinent as a chemical reaction between urine and faeces causes the release of ammonia and urea.

3. **Patients with a pyrexia** will usually be hot and sweaty. Pyrexia may relate to a number of underlying problems for example:
   - Fever
   - Trauma
   - Anxiety
   - Use of certain medications, for example chemotherapeutic agents
   - Patients with damage to the cerebral cortex, affecting the hypothalamus which regulates temperature.
4. **Patients having major surgery.** National guidelines in the UK (NICE, 2008) recommend that the body temperature is controlled for patients having major surgery. This should include the pre-, peri- and postoperative period. The stress of having surgery or being in pain postoperatively may initiate the fight or flight response resulting in a raised temperature and excessive sweating, increasing the risk of skin damage. Patients may also be at risk of exposure to high levels of fluid if they have drains *in situ* or a large heavily exuding wound.

5. **Patients with burns,** especially those with a large surface area, frequently have problems regulating their temperature. In addition they may be losing large quantities of fluid from the burned area.

6. **Obese patients** particularly the morbidly obese. Bariatric patients frequently have problems with temperature regulation: the skin becomes at risk from excessive sweating and because of their size and weight these patients pose additional challenges in moving and handling. They may also have problems associated with incontinence because of difficulties in using toilet facilities.

7. **Patients in a humid climate,** or where air conditioning is not available, may have problems with both increased skin temperature and humidity.

8. **Patients with very wet wounds.** Where wounds have high levels of exudate the dressings may leak and cause both maceration and excoriation to the skin.

<table>
<thead>
<tr>
<th>Condition / problem</th>
<th>Temperature</th>
<th>Moisture problems</th>
<th>Fluid containing irritant</th>
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</thead>
<tbody>
<tr>
<td>1.   Pressure ulcers</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>2a. Continence – urinary</td>
<td></td>
<td>✓</td>
<td></td>
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<tr>
<td>2b. Continence – faecal</td>
<td></td>
<td>✓</td>
<td></td>
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<tr>
<td>2c. Continence – double</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>3.   Pyrexia</td>
<td>✓</td>
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<tr>
<td>4.   Patients having major surgery</td>
<td>✓</td>
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<tr>
<td>5.   Patients with burns</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>6.   Obese / bariatric</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>7.   Patients in a humid climate</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>7.   Heavily exuding wound</td>
<td>✓</td>
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Contraindications and precautions
Although the Skin IQ™ MCM has no associated direct contraindications, the caregiver should refer to and follow any contraindications in the product labelling for the pressure redistribution surface and/or bed frame being used in conjunction with the Skin IQ™ MCM.

The Skin IQ™ MCM is designed to fit pressure redistribution surfaces that are 2.03–2.13m (80–84 inches) long and 88.9–91.44cm (35–36 inches) wide. It may be used for a maximum of 60 days for patients weighing up to 360lb and for a maximum of 30 days for patients weighing 361–500lb (KCI, 2010). However, clinicians should check that the pressure redistributing mattress and bed frame can support these weights before use.

APPLICATION OF THE SKIN IQ™ MCM
The diagram on the inside flap provides an illustrated guide to installation.

1. Remove Skin IQ™ cover from shipping bag. Inspect all items carefully.
2. Remove all bedding (sheets, blankets and pillows) from the existing pressure redistribution surface.
3. Place the Skin IQ™ cover on top of the existing pressure redistribution surface, ensuring the foot graphic on the coverlet is at the foot end of the bed.
4. Connect the power supply to the fan located underneath the foot end of the Skin IQ™ cover.
5. Ensure the cord that runs from the fan to the power supply is placed on the floor under the bed. Improper placement of the cord is a trip hazard and could cause injury.
6. Pull the Skin IQ™ cover over the pressure redistribution surface by stretching it over each corner securely. Do not trap the power cord between the cover and mattress.
7. Smooth out wrinkles on the Skin IQ™ cover.
8. Secure the coverlet to the bed frame using the hook-and-loop straps, located on the underside of the Skin IQ™ cover. Failure to properly secure the cover to the existing surface may lead to patient or user injury or equipment damage.
9. Ensure strap placement does not interfere with the operation of the bed functions. Failure to do so could result in patient injury or equipment damage.
10. Write the therapy start date on the law tag at the foot end of the Skin IQ™ cover to track the days of usage. Failure to track duration of use may void warranty.
11. Confirm there are no sharp objects in the immediate area which may damage the Skin IQ™ cover.
12. Connect power supply to the power cord.

13. Connect power cord to a properly grounded electrical outlet. Ensure the power supply and cord are stored on the floor beneath the bed. **Only use a grounded power outlet and the power cord supplied with the Skin IQ™ power supply. The Skin IQ™ should never be operated with a worn or damaged power cord.**

14. Move hand to the end of the bed and press the foot end of the Skin IQ™ cover to feel the vibration from the fan. A low humming sound indicates the fan is working.

**These instructions do not provide specific safety or operational information for the pressure redistribution surface and/or bed frame provided by the facility for use with the Skin IQ™ MCM. Consult product labelling before use.**

**CARE AND CLEANING**

Use care when handling or transporting the Skin IQ™ cover. Dropping or other sudden impacts may result in damage to the device.

During patient use, clean the Skin IQ™ cover with a mild soap and water solution as per institution protocols. Do not launder. Remember the Skin IQ™ MCM is for single patient use only.

Avoid spilling fluids on any part of the Skin IQ™ power supply. If spills do occur:
- Disconnect the power cord from the wall outlet
- Clean fluids from the product
- Ensure there is no moisture on or near the power supply and power plug before reconnecting the power supply.

**DISPOSAL**

The Skin IQ™ cover is disposable, but some items that come with it can be reused. The power supply and cord can be reused (see page 16).

Consider all local facility policies and procedures with regard to cleaning, inspection and reuse of electronic equipment. If not reused, dispose of power supply as per approved local procedures.

To dispose:
- Unplug power cord from wall
- Unplug power supply from fan
- Cut fan out of cover
- Dispose of Skin IQ™ cover and fan according to approved local institutional procedures.
3. THE SKIN IQ™ MICROCLIMATE MANAGER (MCM)

**GENERAL PROTOCOLS**
- Avoid contact of sharp instruments with the Skin IQ™ MCM. Punctures, cuts and tears will prevent proper operation.
- Follow all applicable safety rules and institution protocols concerning patient and caregiver safety.

**THE COMPLETE SKIN IQ™ MCM PACKAGE INCORPORATES:**
- Coverlet with instructions for use booklet (included in complete kit or coverlet only)
- Power supply (included in complete kit or available as a separate item)
- Power cord (included in complete kit or power supply only).
1. Can I use an incontinence sheet with the Skin IQ™?
Yes it is possible to use incontinence sheets. The use of the Dri-Flo™ breathable product is preferred as it maximises moisture management (ie provides a higher MVTR). Do not use incontinence pads that have a plastic layer as they can cause the patient to sweat and can trap air and moisture next to the skin.

2. Do patients who are sensitive to temperature have problems using Skin IQ™?
The Skin IQ™ has no effect on core temperature. The only decrease in temperature is a drop of approximately 1°C in skin temperature.

3. Do I need to take special care when washing patients on Skin IQ™?
Washing patients can be done as usual. However, apply common sense and do not spill excess water on the Skin IQ™ cover.

4. Can I use the Skin IQ™ for obese patients?
The Skin IQ™ MCM can be used for patients up to a maximum of 500lb.

5. Can I use barrier creams to protect the skin with Skin IQ™?
Skin protectants can be used, but these should be applied thinly to avoid occluding the skin.

6. Can I use positioning wedges with Skin IQ™?
Wedges can be placed under the Skin IQ™ to support the patient without interfering with the working of the device.

7. The Skin IQ™ looks stained. Do I need to replace it?
There is no need to replace the Skin IQ™ cover when it has stains on it. Try to clean the cover with a mild soap and water solution to remove any potential contaminants.

8. How long can Skin IQ™ be used for?
The Skin IQ™ can be used for a maximum of 60 days for patients weighing up to 360lb and for a maximum of 30 days for patients weighing from 361-500lb. The Skin IQ™ is for single patient use only.

9. How do I know that the Skin IQ™ is working?
Use your hand to feel the vibration from the fan at the end of the bed.

10. Can I use the Skin IQ™ with an alternating pressure mattress?
The Skin IQ™ can be used with any type of therapeutic support surface that does not affect its ability to operate effectively.
REFERENCES


Black J (2011) Comment in Simplifying Skin Integrity. Product Literature, KCI Licensing Inc. 1/11


KCI (2010) Skin IQ™ Microclimate Manager. Instructions for use. Please contact KCI for further details


GLOSSARY OF TERMS

**Excoriation:** Damage to the skin caused by the chemical component of a fluid which causes skin stripping. This can be extremely painful.

**Maceration:** Overhydration of the skin causes swelling of the skin, resulting in reduced smoothness which increases susceptibility to friction and shear forces.

**Moisture lesion:** Frequently related to effects of incontinence on the skin surrounding the peri-anal area and not normally associated with a bony prominence.

**MVTR:** The MVTR measures the ‘breathability’ of a material in terms of how well moisture vapour will pass through the cover material. A cover with a low MVTR allows moisture to quickly build up on the skin’s surface.

**Negative airflow:** Use of a fan that pulls moisture and heat away from the patient.

**Skin microclimate:** Microclimate is generally a term used to describe what is happening between the skin and the surface with which it is in intimate contact. Factors most commonly ascribed to microclimate are moisture and humidity. It is believed that these can have significant impact on the skin and it’s ability to withstand insults from trauma, eg friction and lack of perfusion (ie pressure damage).

**Transepidermal water loss (TEWL):** The ability to breath off fluid from the skin through the epidermis. This is a normal function of the skin.

**Vasocontraction:** Constriction of the blood vessels to either reduce fluid flow or maintain temperature.

**Vasodilation:** Opening of the blood vessels to improve blood flow into a local area, eg after an injury and to allow heat loss.
APPENDIX 2
EXCORIATION TOOL — HEALTHCARE IMPROVEMENT SCOTLAND 2009

Use this tool to identify the cause of tissue damage and to grade the cause. Key principles of assessing skin excoriation:

- Recognise different types of tissue and differentiate between healthy tissue and damaged tissue
- Identify if the lesion is over a bony prominence
- Make a visual assessment of the lesion and supplement this through discussion with colleagues.

For further information and to download the tool, please go to: www.healthcareimprovementscotland.org
CUSTOMER CONTACT INFORMATION
For questions regarding this product, supplies, maintenance or additional information about KCI products and services, please contact KCI or a KCI authorised representative

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