Prevention and Management of Incontinence-Associated Dermatitis

By Vicki Haugen, RN, MPH, CWOCN, OCN, FCN; and Denise Nix, MS, RN, CWOCN

Incontinence-associated dermatitis (IAD) is characterized by skin inflammation resulting from exposure to urine and/or feces as a result of incontinence. IAD manifests as skin redness with or without blistering, erosion, or loss of the skin barrier function and is a painful condition. IAD is a common problem in hospitalized acute, long term and home care patients. A major problem associated with IAD is mistaking it for pressure injury, which results in the wrong care plan being initiated. In their article, Haugen and Nix discuss how IADs can be prevented and reversed with appropriate skin care.

Pressure ulcers (PU) are common in patients who spend extended periods of time in bed. These sores are an indicator of poor prognosis and may contribute to patient mortality. The condition is often avoidable using PU prevention strategies that reduce the magnitude and/or duration of pressure at the interface of a patient and his/her support surface (mattress). Dr. Black discusses how this is achieved by physically repositioning the patient or using pressure relieving support surfaces such as cushions, mattress overlays, specialty mattresses or specialty beds.

A comprehensive approach is required to accurately assess and treat IAD. IAD can range in severity and may present with erythema, swelling, oozing, vesiculation, crusting, scaling, and infection. IAD is costly, painful, and for the most part, preventable.

An effective plan of care for individuals with IAD includes (1) assessment and management of incontinence etiology, (2) perineal skin risk assessment, (3) gentle cleansing and moisturization, (4) application of skin barriers, (5) treatment of secondary infection, and (6) the use of containment devices, if indicated.

Etiology and Pathology

Multiple variables work together to cause perineal skin breakdown. Excess moisture—from perspiration or incontinence—alters the skin’s protective pH and increases the permeability of the stratum corneum. Frequent cleansing can cause further pH changes and damage from friction. In addition to exposure to urine and feces, factors such as irritant intensity, exposure duration, and conditions that cause diarrhea may determine the degree of risk for IAD. For example, studies suggest that the presence of secondary infection, and (6) the use of containment devices, if indicated.

A comprehensive approach is required to accurately assess and treat IAD.
Pressure ulcers develop from pressure applied to tissues. Both the magnitude and duration of pressure contribute to ulcer formation, so preventive measures address both issues. The duration of pressure is typically controlled by turning and repositioning. The magnitude of pressure is reduced by using various support surfaces: “specialized devices for pressure redistribution; designed for management of tissue loads, microclimate and/or other therapeutic functions. They include mattresses, integrated bed systems, mattress replacements, overlays and seat cushions or seat cushion overlays.”

(NPUAP, 2007) The type of surface is often categorized by its mechanism of action.

Pressure ulcers also occur when the skin’s tolerance for pressure is reduced. Factors that reduce skin tolerance include moisture and shear forces. Warm, moist skin changes the normally dry epidermis to a tacky surface that does not glide on the support surface. This increases shear forces—and the risk for pressure ulcers. In addition, warm skin is metabolically more active; but, while pressure is applied, blood flow is not delivered. This is a particular problem with diaphoretic patients.

Patients who are most likely to develop pressure ulcers include those who are dyspneic, obese, in pain, in shock, and have spinal cord or head injuries.

In the past, support surfaces were labeled as “pressure relieving” or “pressure reducing.” However, pressure cannot be relieved on any body part—only redistributed. So today’s term, pressure redistribution, more accurately describes the support surface’s function.

Ideally, the body area chosen to tolerate the pressure is large and well padded. When a patient is placed on a high-immersion support surface, pressure is redistributed from the sacrum to the buttocks, which is normally well padded with muscle and subcutaneous tissues. Terms that describe the functions of support surfaces are listed in Table 1.

Clinical studies of support surfaces

While the science of pressure ulcer formation and the use of support surfaces to reduce the magnitude of pressure are fairly well understood, surprisingly few guidelines exist for selecting and using support surfaces.

A recent meta-analysis of 53 trials of support surfaces for pressure ulcer prevention reviewed studies from 1964 to 2010 (during which considerable advances were made in support surface technology and standardization of terms). Support surfaces were divided into “low tech” and “high tech.” “Low tech” devices included foam body supports, sheepskin overlays, and mattresses. “High tech” devices included alternating pressure (AP), low-air loss (LAL) and air-fluidized therapy beds (AFT). Interpretation and extrapolation of results is problematic because many studies compared a “support surface” to a “standard hospital mattress,” which has varied over time and by facility.
Results showed that foam mattresses (a form of reactive continuous low-pressure redistribution) and alternating air mattresses (a form of dynamic pressure redistribution) were better at reducing pressure ulcers than standard spring-form hospital mattresses. However, they found no difference between alternating pressure and constant low-pressure mattresses in preventing pressure ulcers. Common forms of constant low-pressure mattresses are those made of foam. Similarly, Nixon and colleagues reported no difference in pressure ulcer development in almost 2,000 patients randomly assigned to an alternating-pressure overlay or an alternating-pressure mattress replacement.

A prospective randomized trial by Russell and colleagues in the U.K. assigned more than 1,100 elderly patients to a standard hospital mattress or a viscoelastic polymer foam mattress, a form of continuous low-pressure redistribution. Russell reported that 22% of patients on a standard mattress developed pressure ulcers compared to 15% on the foam mattress. Collectively, these results indicate that use of viscoelastic foam for pressure ulcer prevention is a good choice for patients in general. In the past decade, most hospitals have used some form of foam mattresses for general patient care and pressure ulcer prevention for low- and moderate-risk patients.

**Types of support surfaces**

**Foam Mattresses**

Foam mattresses allow the patient to “immerse” into the surface to redistribute pressure applied to the skin. Viscoelastic foam, commonly called memory foam, is a reasonable support surface for patients who are at low risk for pressure ulcers. Such patients include those who are not bedfast and can move in bed. If scoring risk for pressure ulcers using a standardized risk assessment such as the Braden Pressure Sore Risk Assessment, such patients would be scored 3 or 4 on mobility and activity subscales.

The life span of foam is based on its thickness and hours of use. In normal household use, foam mattresses can last a decade. However, when patients lie in bed for 24 hours a day, the mattresses’ life span is shorter. In addition, a 300-pound patient “ages” the foam faster than a 100-pound patient. Clinical staff should manually assess the mattress by feeling for areas of wear, especially in the middle of the mattress. Look for mattress sags or depressions that do not recover when the patient is out of bed. It is also advised to write the date of mattress purchase on the mattress to track the time in use.

The mattress cover, called the ticking, is designed to reduce infection transmission; however, ticking fabrics do not “breathe.” This makes the patient’s skin become warm and wet from sweat. Too much moisture and heat collecting at the interface of the skin and support surface create a microclimate conducive to skin breakdown.

**Foam Overlays**

Foam overlays such as egg-crate overlays can be placed on top of an existing sleep surface. But they do not provide adequate immersion. When the foam is ≤ 2 inches thick, the patient’s weight often compresses the foam to the point of no advantage. For adequate immersion, 4 inches of foam is required. However, when that height is added to the bed, the sleep surface height often exceeds that of the bed’s side rails. When adding any kind of overlay to sleep surfaces, check that the surface is not higher than the side rails and that there is no excessive space along the sides of the mattress. This process will avert falls or entrapments.

**Static Air Mattresses**

Static air mattresses contain air-filled cells that do not move beneath the patient. These support surfaces allow the patient to “immerse” into the air to reduce pressure. Variations of these mattresses include reactive surfaces that allow air to move passively from one cell to another as the patient moves. For example, when a patient turns onto his right side, air cells on the right side deflate due to the patient’s weight; then the air moves into the cells on the left side of the bed. This feature can assist with moving the patient from side to side in the bed. These air cells can also be intentionally deflated to move the patient toward one side of the bed, thereby facilitating turning.

**Static Air Overlays**

Like all overlays, this support surface is placed on the top of an existing mattress for additional immersion to redistribute pressure. These devices are ideal for patients who cannot be reasonably turned side to side (patients on stretchers, ER gurneys, OR tables). Usually static air overlays are prefilled with air, so no adjustments can be made to change

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**References**

1. Russell and colleagues in the U.K.
2. Nixon and colleagues
3. Braden Pressure Sore Risk Assessment
4. A prospective randomized trial by Russell and colleagues in the U.K.
5. Russell reported that 22% of patients on a standard mattress developed pressure ulcers compared to 15% on the foam mattress.
6. Clinical staff should manually assess the mattress by feeling for areas of wear, especially in the middle of the mattress. Look for mattress sags or depressions that do not recover when the patient is out of bed.
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8. Too much moisture and heat collecting at the interface of the skin and support surface create a microclimate conducive to skin breakdown.
9. Foam overlays such as egg-crate overlays can be placed on top of an existing sleep surface. But they do not provide adequate immersion.

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immersion into the device. Most of these devices are discrete, self-contained cells of air that do not communicate with each other; if one cell ruptures, the surface remains functional. An advantage to such devices is that they do not require power to function; therefore, the patient can be transferred with the device in place, providing pressure redistribution. As with any overlay, assess the additional height it adds to the sleep surface; ensure that the added mattress height does not exceed the height of the side rails.

**Alternating Pressure Mattresses**

Alternating pressure (AP) support surfaces redistribute pressure through electrically powered, planned cycles of inflation and deflation of air cells in the mattress. AP mattresses should be considered for patients who do not move independently in bed. If scoring risk for pressure ulcers using a standardized risk assessment such as the Braden Pressure Sore Risk Assessment, such patients would often be scored 1 or 2 on mobility and activity subscales.

When AP mattresses are in use, the patient must still be turned. No support surface replaces manual turning. Support surfaces themselves cannot fully relieve pressure from the body, because the patient remains lying on the surface at all times. However, when a patient is turned to one side, there is little to no pressure on the other side of the body.

**Alternating Air Overlays**

An overlay that provides alternating air movement beneath the patient can reduce pressure ulcer risk. These devices should be considered for patients who are making few independent movements in bed and will likely remain immobile for a fairly long time. The study by Nixon found no difference in pressure ulcer development in patients on AP overlays and mattress replacements.4

**Assessing “Bottoming Out”**

Overlays can be compressed by the patient’s body weight, so assess whether the overlay is “bottoming-out” by placing one hand between the sleep surface and the overlay under the patient’s buttocks. If you can feel bony prominences, the patient may weigh too much to use the overlay. These patients should be placed on a mattress replacement designed for both the patient’s weight and girth.

**Microclimate Control Surfaces**

Surfaces designed to reduce the effect of microclimate include low air-loss surfaces and air-permeable covers on the surfaces. This fairly new technology generally works by having the surfaces pull air away from the patient rather than blow it against the skin. A study of pressure ulcer risk in critically ill patients showed a significant reduction in pressure ulcer formation when a microclimate management surface was used in comparison to a powered alternating pressure surface.10

Low-air loss (LAL) surfaces provide continuous air movement between the body and the surface to dry and cool the skin. To facilitate LAL surfaces, it is important to ensure that the airflow actually reaches the skin. If the patient is lying on surface air holes, no air flow can reach the skin. Although holes are present all over the surface, the patient still must be turned on these surfaces to maximize the effect of the low air-loss function.

**Air-fluidized Therapy (AFT) Beds**

Air-fluidized beds are not commonly used for pressure ulcer prevention; however, they are included here briefly. The fluid medium is created by suspending microspheres of silicone-coated beads in compressed air. The patient is immersed about 70–75% into the surface, creating very low pressures on the skin.11

**Economic impact of support surfaces**

Pressure ulcers impose burdens on quality of life and the economics of care. No single support surface is best for every patient in every situation. Thus, choosing the proper mattress for general med-surg patients versus high-risk patients or those who already have ulcerations is challenging because the patient needs the best support surface with the best proven outcomes for the level of pressure ulcer risk.

Trueman and Whitehead (2010) reviewed the economics of pressure ulcer prevention using advanced pressure redistribution surfaces.2 The review included an illustrated case study that used data from a previous multinational study to estimate the incidence and prevalence of pressure ulcers that would develop when standard mattresses versus other surfaces were used. Costs to manage pressure ulcers were derived from another previously published study. The projected economic impact of re-allocating only at-risk patients (15% of
If a patient is incontinent, an underpad is necessary. Thus, when using an active support surface, it is critical to select a pad that works with the support surface.

developing a pressure ulcer is higher than moderate (Braden 15–18) or the patient is quite immobile (Mobility subscale score of 1 or 2 on Braden). Norton and colleagues developed several generic algorithms, which should be individualized according to the actual products used in a given facility.13

Additional considerations: Use of incontinence underpads with support surfaces

Pressure ulcers and incontinence are common, costly, and often co-morbid conditions.14 Patients who are relatively immobile and have incontinence problems will likely use both support surfaces and absorbent underpads. Although cost often dictates the choice of underpad, other factors, such as the support surface being used by the patient, should also be considered when selecting the appropriate underpad.15 The Royal College of Nursing (RCN) guidelines for pressure ulcer risk assessment and prevention (2001) advise practitioners that the use of incontinence aids must not interfere with the patient’s support surface.

Multiple studies have evaluated the performance of underpads.16 Fader et al. (2004) investigated the effect of underpads on pressure management mattresses. By pressure mapping simulations with a dummy patient, they determined the distribution of pressure over the pelvis of a “patient” with and without an underpad. The study found significant differences in pressures between the buttocks and the mattress when using an underpad on three types of support mattresses. The presence of the underpad raised the peak pressure by approximately 20–25%.14 Although the study utilized only one brand of underpad, it raised important issues regarding (1) selection of an underpad that has the least impact on pressure redistribution, (2) the importance of smoothing out the folds of an underpad to help pressure distribution, and (3) manufacturing considerations for underpads.

Shirran and Brazzelli (2000) found that disposable underpads were more effective than nondisposable pads in decreasing the incidence of skin problems.17 A word of caution, however: disposable pads traditionally contain a plastic backing that can cause the patient to perspire, resulting in compromised skin.15 Skin problems resulting from the use of incontinence products are mostly due to warming, chafing, or the accumulation of moisture between the skin and the absorbent pad.18

Lachenbruch (2005) reviewed published literature in conjunction with graphical techniques and determined that a 5°C reduction in skin temperature had an effect similar to a reduction of interface pressure as provided by currently marketed support surfaces.19 Estimates using laser blood flow results on rat skin suggest that an 8°C reduction in skin temperature might be equivalent to a 29% reduction in interface pressure. He concluded that temperature management has a critical effect on skin health, although more research is needed to determine how much of the clinical...
The only way to reduce the duration of pressure on the skin is to reduce pressure on the skin, so turning the patient on a support surface is still necessary.

Because catheterization carries a significant risk of catheter-acquired urinary tract infections, fewer patients today have urinary catheters, despite incontinence issues. Skin can quickly develop incontinence-associated dermatitis from chronic exposure to urine. Avoid using cloth and other kinds of plastic-backed incontinence pads; they retain heat, moisture and even increase skin pressure.

Turning the patient
Remember that specialty beds and other support surfaces never replace the need to turn the patient. The only way to reduce the duration of pressure on the skin is to reduce pressure on the skin, so turning the patient on a support surface is still necessary. Most people agree that turning need not be every two hours on such surfaces, but a paucity of data exists on recommended frequency of turning. Rich and colleagues reported that frequent manual repositioning of bed-bound patients with hip fractures did not differ between groups turned every 2 hours and those turned less often. Turning the patient every two hours is a safe schedule to start with and can be adjusted if the skin tolerates longer durations.

Effect of LAL is due to temperature management of the skin versus the drying and supportive effects of LAL. Prolonged occlusion of the skin also results in higher humidity, pH, and increased microbial growth. Advances in incontinence products have resulted in breathable materials that reduce the effect of occlusion. Numerous studies have shown the clinical benefit of breathable materials.

Schäfer et al. (2002) showed that products with breathable back sheets decreased skin maceration. Research on skin humidity confirmed that breathable diapers produced significantly less humid conditions than non-breathable diapers in adult and child laboratory simulations. Breathable materials also reduce the survival of Candida, a yeast that can cause irritation and skin or mucous membrane infections.

LAL and AFT beds rely upon a porous top sheet that permits air to circulate around the patient, drying the skin, and reducing maceration that results from pooled moisture. Some manufacturers of LAL and AFT beds warn clinicians not to use these surfaces in conjunction with incontinence products, due to obstruction of airflow to the skin. However, if a patient is incontinent, an underpad is necessary. Thus, when using an active support surface, it is critical to select a pad that works with the support surface. When using air flow beds, air-flow incontinence pads can be used in single layers, remembering that any layer added to a support surface reduces the effectiveness of the surface in preventing pressure ulcers. To obtain the full clinical benefit of LAL and AFT treatment, the underpad must also be breathable to permit air to flow through the underpad and over the patient’s skin.
ence of digestive enzymes in feces is a more intense irritant than urine alone. Diarrhea is considered more irritating than solid stool because, in fecal incontinence, diarrhea generally happens more frequently than normal bowel movements; and liquid feces come into contact with more skin surface than solid feces. The risk of skin damage is directly related to the frequency and amount of incontinent urine or feces and the type of pad or brief used to capture moisture next to the perineal skin.

**References**

Assess for IAD
• Gently cleanse and moisturize skin
• Apply skin protectants
• Treat secondary infections
• Use containment devices if indicated
• Address the cause of incontinence

Assess each incontinent patient and give appropriate treatment to achieve as much normal bowel and bladder function as possible. Common and reversible causes of incontinence include infection, urinary retention, pharmaceuticals, stool impaction or constipation, vaginitis, restricted mobility or dexterity, psychological conditions, and delirium. Interventions may be behavioral, pharmacologic, and/or surgical. Addressing the cause of incontinence is covered extensively in the literature and is beyond the scope of this article.

Assessment of IAD
Conduct skin inspection upon patient admission to help determine the specific plan for preventing and treating IAD. Frequent and ongoing skin inspections, such as with each incontinent episode, facilitate evaluation of the interventions used. Assessment of IAD begins with inspecting all areas of the skin that may be in contact with feces and/or urine. This includes abdominal skin folds; the groin, scrotum or labial region; the buttocks, gluteal fold, and perianal region. Skin changes from fecal incontinence often present posteriorly (i.e. gluteal, buttocks, anal), while those from urinary incontinence may be seen on the anterior perineum (groin, scrotum, labia).

It is critical to differentiate between IAD and other types of skin lesions such as pressure ulcers (Figure 1), as well infectious lesions—because each condition is treated differently (Table 1). Assessment should include identification of any secondary infection (e.g., Candida albicans) requiring antimicrobial therapy. The goal for perineal skin care focuses on keeping feces and urine off the skin with protocols that include cleansing, protection, and containment.

### Skin Conditions in the Proximity of the Perineal/Perianal Region
Tools to evaluate risk and severity of IAD are described in the literature; however, none have been used extensively in research or clinical settings. Still, it is important to identify risk factors that can contribute to IAD, such as loose stools and frequent incontinent episodes. Such identification may assist with intervention and product selection. For example, the patient with incontinence and diarrhea may require a more durable skin barrier (e.g., containment device, barrier paste, or ointment). The presence of candidiasis necessitates the use of an antifungal agent; while open, moist, denuded skin requires a skin barrier product with ingredients that help the product adhere to moist tissue. Additionally, assessment of IAD severity helps determine if the IAD is improving or getting worse and if the care plan needs to be changed.

<table>
<thead>
<tr>
<th>Location</th>
<th>IAD</th>
<th>Candidiasis</th>
<th>Herpes simplex</th>
<th>Pressure ulcers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perineum</td>
<td>Perineum</td>
<td>Perineum,</td>
<td>Perianal</td>
<td>Near bony tissues</td>
</tr>
<tr>
<td>Buttocks</td>
<td>Buttocks</td>
<td>Buttocks,</td>
<td>Buttocks,</td>
<td>Prominences</td>
</tr>
<tr>
<td>Inner thighs</td>
<td>Inner thighs</td>
<td>Groin,</td>
<td>Genitals</td>
<td>Coccyx, sacrum</td>
</tr>
<tr>
<td>Groin</td>
<td>Groin</td>
<td>Low abdominal</td>
<td>Skin folds</td>
<td>Ischium</td>
</tr>
<tr>
<td>Low abdominal</td>
<td>Skin folds</td>
<td>Low abdominal</td>
<td>Skin folds</td>
<td>Under device/tube</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Confirmed risk factors</th>
<th>Urinary and/or fecal incontinence</th>
<th>Moisture Antibiotics</th>
<th>Immunosuppression</th>
<th>Impaired mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution pattern</td>
<td>Confluent or patchy irregular edges with erythema, shallow denudement, and/or maceration</td>
<td>Confluent or patchy rash Small round pustules, plaques and/or satellite lesions</td>
<td>Clusters or isolated individual shallow lesions or blisters</td>
<td>Isolated individual lesions on or near a bony prominence or pressure-causing device</td>
</tr>
<tr>
<td>Color</td>
<td>Pink/red (In African-Americans and others with darker skin tones, inflammation is not necessarily red, but is a different color than the surrounding tissue.)</td>
<td>Pink/red</td>
<td>Initial:pink/red Later:crust</td>
<td>Pink, red, yellow, tan, gray, brown, black</td>
</tr>
<tr>
<td>Discomfort</td>
<td>Pain may be mild to severe</td>
<td>Itching and burning</td>
<td>Initial tingling can become very painful</td>
<td>Pain may be absent to severe</td>
</tr>
</tbody>
</table>

Gentle cleansing and moisturization

Perform skin cleansing promptly after each incontinent episode, using a gentle cleanser indicated for perineal skin cleansing. Perineal cleansers may be packaged as a liquid, emulsion, foam, or towelette. Avoid using bar soaps and products intended for routine skin cleansing or antibacterial handwashing, because they can dry the skin, raise its pH, and contribute to epidermal erosion. No-rinse perineal cleansers are safe and effective and can minimize drying if they contain humectants (substances that preserve moisture) or emollients (substances that soften and soothe the skin). The perineal skin of a patient with incontinence requires moisturization to replace the natural moisturizers that have been removed due to urine, feces, and frequent cleansing. Humectants such as glycerin, methyl glucose esters, lanolin, jojoba oil, or mineral oil replace the oils in the skin and can be found in perineal skin care products. In proper concentrations, cetyl or stearyl alcohol may also be incorporated into skin care products as emollients. No-rinse perineal cleansers minimize drying if they contain humectants because they are left on the skin rather than rinsed away. To avoid allergic contact dermatitis, minimize the use of products containing preservatives and fragrances.

Application of skin protectants

Skin protectants (sometimes called skin barriers or moisture barriers) shield the skin and prevent penetration of irritants or moisture. Active ingredients in skin protectants include petrolatum, dimethicone, or zinc oxide. Skin protectants may be incorporated into skin cleansers or applied separately as a cream, ointment, or paste. Creams are water-based preparations; ointments are oil-based preparations and have a longer-lasting effect than creams because they are more occlusive. A paste is an ointment with powder added for durability and absorption. Liquid-barrier films or skin sealants consist of a polymer combined with a solvent. When applied to the skin, the solvent evaporates and the polymer dries to form a barrier. A liquid-film barrier should not be combined with a barrier cream or paste because these products are often incompatible. Some solvents may irritate compromised perineal skin; therefore, liquid-film barriers for perineal skin care should be limited to products that do not sting.

The selection of clinically effective combination products are encouraged because they reduce steps, save time, and improve adherence to skin care regimes. Combination products for IAD prevention include perineal cleansers and barriers impregnated in a soft disposable wipe, or an antifungal ingredient mixed into a barrier cream or ointment. However, product selection should be primarily based on clinical assessment and skin condition. For example, a barrier cream or combination cleanser/barrier may be adequate to protect the skin of a patient with urine incontinence, whereas open, denuded skin subjected to liquid feces may require an additional, more durable barrier such as an ointment or paste. Several manufacturers of perineal skin care products provide a full line for a systemic approach, including perineal cleansers, skin protectants, and antifungals packaged separately or in various combinations. Table 2 provides examples of products that combine perineal cleansers and protectors. Percentage or concentration of protective ingredients in each product may vary.

Use of containment devices

Underpads or absorbent briefs can
be used as long as they are selected and used appropriately and changed in a timely manner.\(^2,19\) They should wick moisture away from the skin (as with polymer-based absorptive products) rather than trap the moisture against the skin.

External urinary catheters and fecal incontinent collectors (external pouches) can be utilized to divert and contain urine and feces.\(^{21}\) Due to the incidence of urinary tract infections, do not routinely use indwelling (i.e., Foley) catheters for skin protection; discontinue them if they are not medically necessary. Rectal tubes designed to administer medications and decompress the bowel should not be left in place to contain stool because they can perforate the bowel and damage the anal sphincter.\(^{22,23}\) However, FDA-approved, indwelling fecal containment devices can be used safely if indications and contraindications are closely followed.\(^{10,24}\) Table 3 provides additional information related to external pouches and FDA-approved indwelling fecal containment devices.\(^{10}\)

### Treatment of secondary infections

The most common secondary infection found with IAD is candidiasis. *Candida* lives in the digestive tract and elsewhere in the body and usually causes no harm. However, in a warm, moist environment or in the presence of immunosuppression, *Candida* can cause a skin infection.

In the clinical setting, cutaneous candidiasis is treated with a variety of topical antifungal agents (e.g., clotrimazole, econazole, ciclopirox, miconazole, ketoconazole, nystatin). These ingredients or commonly found in creams, ointments, and powders.\(^{25-29}\) Antifungal products should be used only if a fungal rash is present—not routinely. Patients who do not respond to treatment within 2 weeks should be referred for additional evaluation.\(^3\)

Best practice related to antifungal selection in the presence of IAD has not been established. Unfortunately, product selection is often based on availability, clinician preference, and experience rather than evidence. Some clinicians use a skin barrier and antifungal combination product for a one-step approach to treating candidiasis while protecting the skin from further damage from feces and urine, while others believe that initial application of an antifungal followed by a skin barrier is best to ensure optimal absorption of the antifungal ingredient. Antifungal powders are often used with IAD and candidiasis, but they tend to cake, especially in the presence of skin folds. Regardless of the skin care regimen chosen, the patient requires daily skin inspection to evaluate the effectiveness of the treatment. In rare cases, IAD with candidiasis may require systemic antifungal agents.

### Conclusion

Incontinence care should be coordinated with treatment of the causative condition. IAD can be prevented and reversed with appropriate skin care. Caring for individuals at risk for IAD begins with a thorough assessment that identifies potential or actual skin injury as well as factors that may exacerbate skin injury. Incontinence skin care requires timely and appropriate cleansing and protection that minimizes or prevents exposure of the perineal skin to urinary or fecal incontinence. An appropriate product formulary specific to its patient population is key to any successful skin health program. Education

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**Table 3: Incontinence Containment Pouches and Devices**

<table>
<thead>
<tr>
<th>Product</th>
<th>Purpose</th>
<th>Examples *</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Perianal Pouch</strong></td>
<td>Perianal, peristomal skin protection and containment of stool</td>
<td>Hollister Fecal Incontinence Collector Convatec Fecal Collector</td>
<td>Combines pouch with solid skin barrier for non-ambulatory patients. Comes with spout for use with a bedside drain or spout may be cut off and replaced with provided tail closure. Odor-proof and water-proof with gas filter option.</td>
</tr>
<tr>
<td><strong>External Urinary Cather</strong></td>
<td>Perineal skin protection and containment of urine</td>
<td>Mentor - Coloplast Freedom Hollister Retracted Penis Pouch Kendall Uri-Drain Device</td>
<td>Products are made in a variety of sizes and must be properly fit. Latex or latex-free. Application involves self-adhesives or added adhesive strips.</td>
</tr>
<tr>
<td><strong>Indwelling Fecal Containment</strong></td>
<td>Perianal skin protection and containment of loose stool</td>
<td>Hollister Actiflo Indwelling Bowel Catheter Convatec Flexi-Seal Fecal Management Bard DigniCare Stool Management System</td>
<td>Do not use without an MD order. Critical to read manufacturers’ instructions for contraindications and safe use. May need additional perianal protection with moisture barrier paste.</td>
</tr>
</tbody>
</table>

* Examples of product names are not inclusive or intended as an endorsement.

of both professionals and patients is essential for implementing knowledgeable approaches to incontinence and subsequent skin care.

References

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Denise Nix, MS, RN, CWOCN, has been a registered nurse since 1984 with 20 years of experience in clinical practice as a certified wound ostomy and continence nurse specialist. Ms. Nix has served as faculty for the Abbott Northwestern WOC Nursing Educational Program as well as associate director for the webWOC Nursing Educational Program. She has authored and coauthored many publications, given multiple presentations to various health-related organizations, and serves as a consultant to the Minnesota Hospital Association’s SAFE SKIN collaborative involving over 100 Minnesota Hospitals.
1. Reversible causes of incontinence include: 
   A. infection  
   B. constipation 
   C. delirium 
   D. All of the above 

2. Risk factors for IAD include all of the following except: 
   A. Frequent perineal cleansing 
   B. Loose incontinent stools 
   C. Use of NO rinse perineal cleaners 
   D. Urinary incontinence 

3. A plan of care for the prevention and treatment of IAD includes: 
   A. Assessment and management of incontinence etiology 
   B. Gentle cleansing and moisturization 
   C. Application of skin protectants 
   D. All of the above 

4. Perineal skin cleansing should include a product that: 
   A. contains an antimicrobial ingredient 
   B. needs to be used only once a day to help minimize friction 
   C. decreases embarrassing odor 
   D. Is pH balanced to the skin 

5. The patient with incontinent frequent loose stools may require a more durable skin barrier (e.g., containment device or barrier paste or ointment). 
   A. True 
   B. False 

6. Underpads or absorbent briefs selected for use should wick moisture away from the skin (such as with polymer-based absorptive products) rather than trap the moisture against the skin. 
   A. True 
   B. False 

7. Which of the following devices is classified as a reactive support surface? 
   A. Foam mattress 
   B. Alternating air mattress 
   C. Microclimate control surfaces 
   D. Air-fluidized surfaces 

8. The patient is at risk for pressure ulcer development due to confinement to bed with fractures and little independent movement due to pain. Which type of support surface would provide reasonable pressure ulcer prevention when combined with a turning and repositioning program? 
   A. Foam cover with static air cells mattress 
   B. Static air overlay mattress 
   C. Alternating pressure mattress 
   D. Microclimate controlled surface 

9. The patient is on a specialty mattress due to a cervical spinal cord injury. What turning schedule should be used for this patient? 
   A. Every hour due to the high risk for ulceration 
   B. Every 2 hours due to the high risk for incontinence 
   C. Every 2-3 hours on the current mattress if his skin does not develop stage 1 ulcers 
   D. Every 4-6 hours because of the sophistication of the support surface increasing immersion 

10. The patient is on a low-air-loss surface and is incontinent of urine. What skin precautions should be initiated? 
    A. Use of air-flow incontinence pads 
    B. Assessing for incontinence every hour 
    C. Cleaning the skin well with each incontinent episode 
    D. All of the above

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Mark your answers with an X in the box identifying the correct answer(s).

<table>
<thead>
<tr>
<th>What is the highest degree you have earned? (circle one)</th>
<th>1. Certificate</th>
<th>2. Associate</th>
<th>3. Bachelor’s</th>
<th>4. Master’s</th>
<th>5. Doctorate</th>
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</table>

Indicate to what degree did this program meet the objectives: Using 1 = strongly disagree to 6 = strongly agree rating scale, please circle the number that best reflects the extent of your agreement with each statement.

At the end of the session the participant will be able to: 

1. Describe clinical manifestations if □AD 
2. List □ components of a care plan for the patient with □AD 
3. Describe the considerations for upgrading a support surface when a patient is at high risk of developing a pressure ulcer 
4. Identify the principles in choosing incontinence pads when support surfaces are being used.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
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<tbody>
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<td>1 2 3 4 5 6</td>
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Name & Credentials  ________________________________________________________________________
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