Urinary incontinence (UI) is a prevalent problem occurring in men and women across the lifespan. The frequency and volume of incontinent episodes can vary greatly, but there is strong evidence to conclude that even “minor” UI can have devastating social, psychological, physical, and financial implications. Technologic innovations have provided individuals with incontinence and caregivers with an array of options for achieving social continence. Even when UI cannot be completely cured, it can always be managed with products, skin care regimens, occlusive or drainage devices and toileting equipment to ensure optimal skin integrity, odorless urine containment, social independence, comfort, and freedom of movement. Various products, devices, and equipment available to help incontinent individuals preserve independence and quality of life and manage incontinence are described.

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Note: CE Objectives and Evaluation Form appear on page 429.
Table 1. Comparison of Disposable versus Reusable/Washable Pads

<table>
<thead>
<tr>
<th>Disposable Pads</th>
<th>Disadvantages</th>
<th>Reusable/Washable Pads</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Less expensive to buy, but can be more expensive long term.</td>
<td>• Difficult to dispose of when away from home (using public toilets).</td>
<td>• Available in styles similar to normal-looking underwear.</td>
<td>• More expensive to buy upfront, fewer pads needed, wrong choices can be costly.</td>
</tr>
<tr>
<td>• Useful for trips or short periods.</td>
<td>• Problematic for public waste management and landfills.</td>
<td>• May be bulky to store than disposables since fewer are needed.</td>
<td>• Not recommended for heavy urine loss; large pads might still leak.</td>
</tr>
<tr>
<td>• May be fitted with an adhesive strip for easier positioning in underwear.</td>
<td>• Recommended for both fecal and urinary incontinence.</td>
<td>• Should be stored in an airtight container until they can be washed.</td>
<td>• Less wicking away of urine.</td>
</tr>
<tr>
<td>• Some brands more absorbent for heavy UI, and not too bulky when made with super-absorbent gel or polymer.</td>
<td>• Booster pads can be helpful for individuals with heavy incontinence episodes at night or leakage in spite of using high-absorbent products. Similar pads are available to protect furniture. Table 3 illustrates the different types of UI absorbent products and describes usage and special considerations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Available with a wetness strip to indicate need for changing.</td>
<td>• More skin problems associated with cloth products.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Perineal Skin Care

A critical aspect in managing patients with chronic urinary and/or fecal incontinence is the preservation of skin health. Goals of skin care are to prevent perineal dermatitis or to restore perineal skin integrity and prevent recurrent damage. Few studies have focused on perineal skin care for the geriatric client (Bates-Jensen, Alessi, Al-Samarrai, & Schnelle, 2003). Scientific evidence about “diaper dermatitis” reported in the pediatric literature has been applied to the elderly population, but safety and efficacy cannot be assumed since there are significant changes in the skin that occur with aging (Faria, Shwayder, & Krull, 1996; Lyder, 1997). A novel incontinence product developed to prevent skin problems is an adult brief impregnated with petrolatum and zinc oxide (Baldwin et al., 2001). Current care recommendations are based on knowledge of the characteristics of healthy skin, pathophysiology of perineal dermatitis, and clinical studies on products available for perineal skin care.

Characteristics of healthy skin. The healthy epidermis provides a very effective barrier to pathogens and irritants. Factors contributing to an intact barrier include the epidermal cells themselves (keratinocytes), the

volume for weight than fluff pulp (Brazelli et al., 2002; Brown, 1994; Hu, Kaltreider, & Igou, 1990). By design, urine is wicked away from the skin and is absorbed into the core material, leaving the top layer of the product and the skin dry.

Reusable absorbent products are also engineered in different sizes and shapes, but are usually made from cotton, which is hydrophilic (absorbs water), or polyester, which is hydrophobic (repels water) and has good wet comfort (Fonda et al., 2002). Absorbent cores are usually made from knitted fabric made of rayon and/or polyester fibers, and waterproof polymers may be applied to the outer surface to prevent urine soaking through the pad.

When comparing disposable and reusable absorbent products, product selection should consider the frequency, timing, and volume of UI episodes; skin fragility; patient lifestyle; fit and comfort; ease of use; cost; and patient preference (Brazelli et al., 2002; Dunn et al., 2002; Fader et al., 2001) (see Table 1). Table 2 describes types of absorbent products and indications for use. “Pilot-testing” samples of a variety of pads and briefs during the day and night will help determine the most effective, comfortable, and cost-effective product for the individual. In institutional settings, a “one-type-fits-all” approach for both mild and severe UI or for day and night time management is an inappropriate use of the products and may needlessly increase cost (Brazelli et al., 2002; Dunn et al., 2002; Fader et al., 2001).
### Table 2.
Types of Products and Indications for Use

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Rationale</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of Incontinence Episode</td>
<td>UI volume will determine the product size and absorbency requirements. High-quality absorbency will prevent overflow of urine outside of pad or brief. Overpadding or incorrect use of continence pads may increase leakage and skin breakdown.</td>
<td>Large-volume episodes require larger pads or briefs with superior absorbency to prevent leakage at edges of pad and soiling of clothing. Small-volume UI can be managed with pads with adhesive backing with differing levels of absorbency. Men with small-volume UI can be managed with drip collectors made with adhesive strips that adhere to underwear.</td>
</tr>
<tr>
<td>Diurnal Pattern of UI</td>
<td>UI may be heavier in volume during the night than during the day. Recumbency at night may also lead to leakage from a loose-fitting or smaller-sized pad. Pads are changed less often at night, so risk of skin irritation is greater. A high-quality absorbency pad at night may minimize skin problems.</td>
<td>Different types and absorbencies of pads or briefs may be used for day and nighttime UI. Pads may suffice for daytime, whereas full-sized briefs may be required for nighttime to prevent soiling of linens. In addition, high-quality briefs may not require as frequent changing at night so that the patient can sleep for longer intervals.</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>If the patient is able to use the toilet, the ability to take off and put on a product will encourage toileting, prevent UI if pad removal is easy, and be cost effective, if the pad can be reused if dry. Ability of the patient to apply and change pad should be considered in product selection.</td>
<td>Products designed as “pull-ups” simulate normal underwear, but they can be bulky and more costly. A panty and pad insert system is also more similar to underwear and may be more acceptable to the patient.</td>
</tr>
<tr>
<td>Patient Preference</td>
<td>The patient should evaluate comfort, mobility, daily routines, quality/characteristics, and discretion of the product.</td>
<td>The active, alert patient may be more mindful of products that are more bulky under clothing and “noisy,” causing embarrassment in social situations. There can be anxiety about the “appearance” of wearing an incontinence product.</td>
</tr>
<tr>
<td>Cost</td>
<td>High-quality products may cost more upfront, but be more cost effective for the heavily incontinent patient. Cost is reduced when ordering in quantity but increased with overpadding or incorrect product use.</td>
<td>Compare and contrast quality, types, and costs of products. Patient should try out different products to see which one(s) work best given lifestyle and UI volume.</td>
</tr>
<tr>
<td>UI Pad or Brief vs. Feminine Hygiene Products?</td>
<td>Female hygiene “minipads” may suffice for infrequent, small-volume UI episodes, if changed frequently, in the active woman. An absorbent panty liner with super absorbent gel is the next “step up” in management.</td>
<td>“Minipads” can be less costly than UI products, and if changed frequently, may not significantly increase risk for urine dermatitis and skin infection.</td>
</tr>
</tbody>
</table>
skin oils (lipids) that provide the intercellular matrix, and the acidic pH of the skin. The structure of the epidermal barrier is a “brick and mortar” configuration, in which the keratinocytes are the “bricks” and the skin lipids are the “mortar” (Fiers & Thayer, 2000; Gray, Ratliff, & Donovan, 2002).

*Pathophysiology of perineal dermatitis.* Incontinence and incontinence care can cause perineal dermatitis by compromising the epidermal barrier and exposing the epidermis to pathogens and irritants (Faria et al., 1996). Two factors known to adversely affect the barrier function of the skin are overhydration and elevated skin temperatures. These conditions are created when occlusive absorptive products trap body heat and moisture. To avoid an occlusive environment, absorptive products should not be secured too tightly (Akin et al., 2001; Gray et al., 2002). *Repetitive skin cleansing* increases the rate at which the epidermal cells and surface lipids are removed, leading to compromised skin barrier properties. The elderly are at higher risk for dermatitis because of the age-associated changes of a thinner epidermis and reduced production of skin lipids. The acid mantle of the skin is disrupted by exposure to alkaline urine and stool and by repetitive cleansing. Fecal incontinence is more damaging than UI, because stool contains pathogens and intestinal enzymes are activated in an alkaline environment (Atherton, 2001; Fiers & Thayer, 2000; Haugen, 1997).

*Preventive care.* Preventive care maintains the surface barrier function of the skin by minimizing exposure to irritants and pathogens. The key elements of an effective preventive protocol include prompt and gentle cleansing, moisturizers to replace lost lipids, and moisture barriers to protect the skin (Fiers & Thayer, 2000; Gray et al., 2002). Skin care guidelines for cleansing, moisturizing, and protecting are found in Table 4.

*Types of perineal damage.* The most common types of perineal dermatitis are irritant dermatitis, yeast dermatitis, and superficial skin loss due to friction damage. The recognition and treatment of these problems

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**Figure 1.**
Algorithm for Prevention and Management of Perineal Dermatitis

<table>
<thead>
<tr>
<th>Skin Intact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

**Yes**
- UI only?
  - Yes
    - NRC + M-Mb (P or D)
  - No
    - UI + Fl (1 – 2 x/day; soft/formed)
    - NRC + M-Mb (P or D)

**No**
- Skin red and “raw”
  - NRC + Moisture barrier Paste
  - M-Mb
- “Rash” with satellite lesions
  - NRC + M-Mb

**Legend:**
- NRC = No Rinse Perineal Cleanser
- M-Mb = Moisturizer/Moisture barrier combination
- Mb = Moisture barrier
- P = Petrolatum
- D = Dimethicone
- ZO = Zinc oxide

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Skin Intact?
are described in Table 5. Other less-common etiologic factors include allergic contact dermatitis or erythrasma (Fiers & Thayer, 2000; Gray et al., 2002). Figure 1 provides an algorithm for skin care treatment based on skin integrity.

**Indwelling Urinary Catheters And External Catheters**

*Indwelling catheters.* Short-term use of indwelling catheters (less than 30 days) is seldom associated with significant problems apart from urinary tract infection. However, judicious use of long-term catheters in select patients with incontinence or pressure ulcers is necessary because of the associated medical problems. Of these, persistent bacteriuria is the most common and the most challenging to manage.

*Bacteriuria and urinary tract infection.* All patients will have colonization by gram-negative organisms after 30 days of catheterization. Catheter-associated bacteriuria is usually asymptomatic, uncomplicated, and resolves after the catheter is removed. However, up to 30% of patients become symptomatic (Saint & Lipsky, 1999). When infection persists, complications can include prostatitis, epididymitis, cystitis, pyelonephritis, and bacteremia (Wong & Hooton, 2001). The outcome of most clinical importance is catheter-related bacteremia or urosepsis.

*Urine culture indications.* Routine urine cultures are not recommended, as all long-term catheterized patients will have polymicrobial bacteriuria. Cultures should be done only if the patient is symptomatic as evidenced by hematuria, fever, flank or low-back pain, urinary urgency, and delirium. Patients who are cognitively impaired may be more confused, pull at their catheters, or appear to have lower abdominal pain.

If symptomatic infection

---

### Table 3.
**Types of Incontinence Management Products**

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td>Thin pad insert, small volume capacity, less than 8 oz.</td>
</tr>
<tr>
<td><img src="image2.png" alt="Image" /></td>
<td>Moderate absorbency pad, estimated 8 oz capacity.</td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td>Super-absorbent pad with adhesive backing, estimated 15 oz capacity.</td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td>Another example of pad inserts with modifications to increase urine containment, ease of use, fit, and comfort.</td>
</tr>
<tr>
<td><img src="image5.png" alt="Image" /></td>
<td>&quot;Pull-up&quot; disposables: helpful for those who are ambulatory, able to toilet, able to manipulate the pad to pull it up or down, and who have moderate to large volume UI.</td>
</tr>
<tr>
<td><img src="image6.png" alt="Image" /></td>
<td>Pad and pant system or undergarment has an external or internal pouch into which a disposable pad is inserted. When the pad becomes wet, it is replaced with a dry pad.</td>
</tr>
<tr>
<td><img src="image7.png" alt="Image" /></td>
<td>Cotton blend, reusable brief with moisture-proof pouch to hold pad insert. These are available in male and female styles (with lace) and for children.</td>
</tr>
<tr>
<td><img src="image8.png" alt="Image" /></td>
<td>Adult brief with tape at sides to fit securely, elastic leg edging, absorbent core.</td>
</tr>
</tbody>
</table>
does develop, the catheter should be changed and the specimen taken from the new catheter. Bacteria reside in the bladder, in the bladder wall, and along the inner lumen of the catheter and specimens taken from the “old” catheter do not reflect the true dominant bladder organism (American Medical Director’s Association, 1996). Recurrent urinary tract infection may require urologic referral to rule out pathologic conditions such as calculi, tumor, abscesses, or upper urinary tract damage.

Cranberry juice may be effective in inhibiting bacterial adherence in the lower urinary tract in non-catheterized individuals (Avorn et al., 1994; Gray et al., 2002). Unfortunately, there is insufficient research to support ingestion of cranberry juice as a preventative strategy in patients who are catheterized although there do not seem to be risks to consuming this product apart from the high sugar content.

Encrustations. Catheter encrustation is due to gram-negative organisms that proliferate in alkaline urine (pH >6.5) leading to formation of crystals consisting primarily of calcium oxalate or struvite (magnesium ammonium phosphate) (Getliffe, 2003). Encrustations can collect in the bladder and form bladder stones that continue the cycle of bacterial growth and bladder spasms (Getliffe, 1991; Gray, 2001). Acetic acid bladder irrigations may reduce encrustations and acidification of the urine with ascorbic acid might inhibit bacterial proliferation but data to support these practices are equivocal and nonconfirmatory (Carlsson, Wiklund, Engstrand, Weitzberg, & Lundberg, 2001; Castello et al., 1996; Wall & Tiselius, 1990)

Catheter changes. Catheter changes should be based on catheter patency rather than according to fixed intervals (Wong & Hooton, 2001). Some patients are biologically predisposed to developing encrusta-

Table 3. (continued)
Types of Incontinence Management Products

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Example image" /></td>
<td>Two examples of male pouches suitable for urinary dribbling or small-volume UI. Pouches require fitting and a man with a retracted penis will find the pouch difficult to fit. Some men place the penis and the scrotum in the pouch but must be advised on the importance of skin care and skin observation.</td>
</tr>
<tr>
<td><img src="image2.png" alt="Example image" /></td>
<td>Cunningham clamp penile compression device.</td>
</tr>
<tr>
<td><img src="image3.png" alt="Example image" /></td>
<td>Protects linens when patient has high-volume UI not contained by briefs. Some pads are cloth-covered plastic; others contain super-absorbent gel.</td>
</tr>
<tr>
<td><img src="image4.png" alt="Example image" /></td>
<td>Waterproof chair pad, absorbs up to 600 cc. Machine washable.</td>
</tr>
<tr>
<td><img src="image5.png" alt="Example image" /></td>
<td>Specially designed urinals for men and women that can be used seated or lying down.</td>
</tr>
<tr>
<td><img src="image6.png" alt="Example image" /></td>
<td>Raised toilet seat.</td>
</tr>
<tr>
<td><img src="image7.png" alt="Example image" /></td>
<td>Toilet with assist/grab bars.</td>
</tr>
</tbody>
</table>

Note: Reproduced with permission of the Canadian Continence Foundation.
tions (blockers) and may require catheter changes as often as weekly. Others (nonblockers) may require changes only every 2 or 3 months. The catheter should be changed before encrustations and reduced output are noted. An obstructed catheter can lead to traumatic bladder overdistention and urine leakage around the catheter.

Leakage of urine around the catheter can also be due to bladder spasms secondary to constipation or fecal impaction, a large catheter balloon (30 ml), large catheter (>18 Fr), symptomatic urinary tract infection, kinking of the catheter, or trauma at the bladder neck due to traction on the balloon if the catheter is not properly anchored to the thigh or abdomen. If treatment of the underlying problem does not improve leakage, referral to a urologist for a cystoscopy may be indicated to rule out bladder calculi or other pathology. Anticholinergics such as oxybutynin or tolterodine may eliminate bladder spasms and maintain continence with the catheter in place. Such therapy can cause constipation and xerostomia; both an aggressive bowel program and routine mouth care should be put instituted for patients who are on anticholinergic medications.

Catheter composition. Catheter materials have been studied with regard to predisposition for adherence of bacteria and other urinary precipitates to the inner lumen. Silicone catheters have larger interior lumens than other catheters of the same size and may allow more efficient urine drainage. For some, a

Table 4.
Skin Cleansing, Moisturizing, and Protecting Guidelines

<table>
<thead>
<tr>
<th>Process</th>
<th>Goal</th>
<th>Agents and Rationale</th>
<th>Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleansers</td>
<td>To promptly cleanse and remove irritants and pathogens.</td>
<td>Cleansing agents should be pH-balanced and contain surfactants to emulsify stool and lift irritants from skin surface with minimal mechanical force; “scrubbing” of the skin is damaging. Some cleansing agents contain antimicrobial agents; the value of these agents has not been proven. Cleansers with added fragrance may contribute to allergic contact dermatitis.</td>
<td>Use of “bar soap and washcloths” is detrimental to the epidermis. Most bar soaps are alkaline, thus altering the acid mantle and protective barrier of the skin. Cotton washcloths tend to be coarse and abrasive on the skin. No rinse formulations are available.</td>
</tr>
<tr>
<td>Moisturizers</td>
<td>To replace skin lipids and maintain skin hydration.</td>
<td>Key ingredients are emollients (mineral oil, lanolin, aloe vera, almond oil) and humectants (propylene glycol, glycerin, and d-panthenol). Emollients penetrate the skin to restore lipids, humectants bind moisture at the epidermal level.</td>
<td>Moisturizers are available as thick lotions or creams; they may also be included in perineal cleansers and in moisture barrier products.</td>
</tr>
<tr>
<td>Protective Barrier Ointments</td>
<td>To protect the skin against irritants and moisture by providing a water-repellant coating to the skin.</td>
<td>Two major categories: 1) Plasticizing clear films, known as skin sealants, and 2) thick creams or ointments containing petrolatum, zinc oxide, dimethicone, or some combination of these products.</td>
<td>Dimethicone-based products provide a nonocclusive barrier film that is nongreasy and easy to apply and remove. Less effective if patient is incontinent of liquid stool. Zinc oxide-based products are more occlusive and can be difficult to apply and remove, but are more resistant to liquid stool. Reapplication after cleansing after UI may not be necessary, but careful removal, cleansing, and reapplication after fecal incontinent episodes is required.</td>
</tr>
</tbody>
</table>

Fiers & Thayer, 2000; Gray et al., 2002
hydrophilic-coated catheter is more comfortable and less likely to inflame urethral tissue than a nonhydrophilic catheter and at least one study suggests that encrustation may develop more slowly (Cox, 1990). Mucosal irritation from urethral catheters can cause an inflammatory reaction and increased mucous production. Changing the catheter type may reduce mucous production and increase the catheter life. For patients who develop encrustations and blockage frequently, the use of an inexpensive catheter changed every 7 to 10 days (depending on their pattern of blockage) may be more economical. Silver-hydrogel catheters and catheters with anti-infective surfaces have been developed to inhibit bacterial adherence but have not undergone clinical trials in patients with long-term indwelling catheters (Maki & Tambyah, 2001; Saint & Lipsky, 1999).

**Catheter care.** Numerous methods, all ineffective in preventing bacteriuria in catheterized patients, have been tried. For example, antibiotic ointments at the meatus, bladder irrigations with antibiotic solutions, antiseptic solutions in the catheter-drainage bags, and oral antibiotics have not decreased bacteriuria and bacteremia. Daily meatal care should consist of gentle cleansing with nonirritating skin cleanser.

**Catheter size.** Large catheter lumens (> 18 Fr) distend the urethra and may irreparably damage the urethra and bladder neck.

### Table 5.

<table>
<thead>
<tr>
<th>Type of Damage</th>
<th>Etiology</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irritant Dermatitis</td>
<td>Due to primary damage to the epidermal cells, such as occurs with prolonged exposure to urine. The injury to the skin cells triggers an inflammatory response, which is manifest initially by erythema and mild edema; if the process is not interrupted, the inflammation becomes more severe and the patient develops blistering, erosion of the epidermis, and weeping.</td>
<td>Irritant dermatitis due to urine or feces is best managed with a moisture-barrier paste. These products combine a moisture-barrier ointment such as zinc oxide with an absorptive powder to adhere to moist skin, absorb moisture, and provide a waterproof barrier against external moisture and contaminants. Because these products are designed to resist washing and removal, caregivers must be taught to use perineal cleansers and gentle technique for removal.</td>
</tr>
<tr>
<td>Yeast Dermatitis</td>
<td>Develops when Candida albicans organisms adhere to and penetrate the compromised epidermis. Characteristic skin changes include a maculopapular rash that is confluent in the center with distinct “satellite” lesions at the periphery. The involved area is reddened and may be pruritic and tender.</td>
<td>Yeast dermatitis requires treatment with an antifungal agent such as miconazole or nystatin; many nonprescription moisture-barrier products now offer an antifungal formulation that is appropriate for patients with yeast dermatitis. Alternatively, an antifungal powder or cream can be applied to the affected area and then covered with a moisture-barrier product</td>
</tr>
<tr>
<td>Friction Damage</td>
<td>Occurs when macerated skin is exposed to external “rubbing” forces, as may occur with cleansing or with patient movement against absorptive garments or the bed linens. Shallow, painful lesions that are moist and red characterize the superficial skin loss. Friction damage involves the skin surfaces in contact with the bed or chair (the buttock area including the ischial tuberosities and sacrum). Skin-to-skin friction can occur between the thighs and in the creases of the upper thigh and perineum in obese individuals.</td>
<td>Friction damage and abrasion are best managed by minimizing frictional forces and by covering the affected area with a protective absorptive dressing, such as a hydrocolloid wafer or a moisture-barrier paste.</td>
</tr>
</tbody>
</table>

Fiers & Thayer, 2000; Gray et al., 2002
Catheters with 30 ml balloons may also injure the bladder neck and contribute to bladder spasms and leakage. It is recommended that the smallest catheter size adequate to provide drainage be used (usually no larger than a 16 Fr with a 5 ml balloon inflated with 10 ml sterile water to ensure symmetry of the balloon) (Moore & Rayome, 1995). Larger lumen catheters are indicated in special situations such as postoperative urologic patients with hematuria to allow clot drainage. The common strategy of increasing catheter size to treat bypassing of urine around the catheter is ineffective and counterproductive. Increasing lumen size will traumatize the urethra, possibly obstruct urethral glands, and certainly exacerbate urine leakage. In men, suprapubic catheters might be preferable for long-term management to avoid urethritis, urethral erosion, prostatitis, and orchidoepididymitis (American Medical Director's Association, 1996).

Catheter care practices intended to prevent or delay the onset of urinary tract infection include avoiding catheterization, using aseptic technique for insertion, removing the catheter as soon as possible, maintaining a closed drainage system and dependent drainage, minimizing manipulations of the system (secure catheter to body, wash hands and wear gloves between patients), and separating patients who are catheterized (Maki & Tambyah, 2001).

Randomized, controlled studies with adequate sample sizes have not been conducted to provide authoritative guidelines for care of indwelling, suprapubic, or intermittent catheterizations. Indications for long-term catheterization are described in Table 6 and general preventive guidelines are outlined in Table 7.

**Table 6. Indications for Indwelling Catheter Use**

1. Patients whose incontinence is caused by urinary retention when no other intervention is feasible.
2. Patients who are terminally ill and incontinent.
3. Short-term treatment for patients with Stage 3-4 pressure ulcers.
4. Individuals who are severely impaired in whom alternative interventions are not an option.
5. Patients who live alone and do not have a caregiver to provide other supportive measures.
6. Hemodynamically unstable patients that require monitoring of urine output.
7. Patients undergoing prolonged surgical procedures and postoperatively to monitor urine output or bleeding.

Saint & Lipsky, 1999

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**Table 7. Guideline for Preventing Catheter-Associated Urinary Tract Infections: Summary of Major Recommendations from the Centers for Disease Control, 2002**

**Category I. Strongly Recommended for Adoption**
- Educate personnel in correct techniques of catheter insertion and care.
- Catheterize only when necessary.
- Emphasize handwashing.
- Insert catheter using aseptic technique and sterile equipment.
- Secure catheter properly.
- Maintain closed sterile drainage.
- Obtain urine samples aseptically.
- Maintain unobstructed urine flow.

**Category II. Moderately Recommended for Adoption**
- Periodically re-educate personnel in catheter care.
- Use smallest suitable bore catheter.
- Avoid irrigation unless needed to prevent or relieve obstruction.
- Refrain from daily meatal care with either of the regimens discussed in text.
- Do not change catheters at arbitrary fixed intervals.

**Category III. Weakly Recommended for Adoption**
- Consider alternative techniques of urinary drainage before using an indwelling urethral catheter.
- Replace the collecting system when sterile closed drainage has been violated.
- Spatially separate infected and uninfected patients with indwelling catheters.
- Avoid routine bacteriologic monitoring.

Saint & Lipsky, 1999

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**External Urinary Catheters**

External urine collection systems may be associated with a
lower risk of bacteriuria and symptomatic UTI than indwelling catheters. External collection devices are almost exclusively used in men; attempts to find a functional, comfortable, and effective device for women have, to date, not been successful. In one study, the risk of developing bacteriuria in men wearing an external catheter was approximately 12% per month compared to 100% for patients with long-term indwelling catheters. External catheters must be applied and changed according to the manufacturers’ directions to prevent abrasion, dermatitis, ischemia, necrosis, edema, and maceration of the penis. Frequent skin assessment is vital. In a study comparing latex and silicone external condom catheters, silicone catheters had greater adherence with less risk of “pop-off” and provided greater vapor transmission, thus reducing the risk of skin maceration and damage (Edlich et al., 2000).

Pessaries

The use of pessaries dates back thousands of years. Ancient Egyptians were known to have used devices for pelvic organ prolapse, probably in the form of a golden phallus that was inserted into the vagina. The earliest pessaries were large stones or other materials such as brass, cork, gold, and silver (Deger, Menzin, & Mikuta, 1993; Emge & Durfee, 1966). Today, pessaries are pliable and made of polyvinyl plastic or medical-grade silicone (Miller, 1991).

Pessaries are used to treat pelvic organ prolapse and stress UI. They provide pelvic organ support by creating a functional obstruction within the vaginal vault and promote continence by supporting the bladder neck and elevating the urethrovaginal angle in order to partially obstruct the proximal urethra. Urodynamic studies have shown that pessaries restore continence secondary to changes in urethral functional length, closure pressure, and cough profiles (Abrams, Cardozo, Khoury, & Wein, 2002; Bhatia & Bergman, 1985; Palumbo, 2000).

Different types of pessaries are listed in Figure 2. For mild stress UI without significant pelvic prolapse, tampons, bladder neck support prostheses, and diaphragm rings can be used episodically during exercise (Kondo et al., 1997; Miller, 1991; Reali & Walters, 1990). Pessaries, on the other hand, are specifically designed for extended use. Determining the best type, size, and fit of the pessary can be difficult and may require a trial of different types. There are a variety of options. The most common types for uterine or vaginal vault prolapse without incontinence are rings without support (see Figure 2), doughnuts (see Figure 3), and Gelhorns (see Figure 4) (Poma, 2000); for incontinence alone the incontinence dish (see Figure 5), Hodge, and ring with support (see Figure 6) are most preferred. Adequate estrogenization of the

**Figure 2. Ring Without Support**

- 1st and 2nd degree prolapse
- Posterior Fornix to the Pubic Notch
- Fitting
- Removal

**Figure 3. Donut**

- The Donut pessary is very effective for 3rd degree prolapse.
- The Donut fits by filling the Vaginal Vault and supporting the prolapse.

**Figure 4. Gellhorn**

- Silicone Flexible
- Silicone 95% Rigid
- Levator Ani Muscles
- Cervix rests behind disk portion of pessary

*Note:* Images courtesy and reproduced with permission of Mentor Corp.
vaginal mucosa is imperative. In the older woman with atrophic vaginitis, vaginal dryness, or vaginal atrophy, a course of topical estrogen cream or Estring® should be instituted before pessary insertion to improve mucosal integrity. With appropriate care, complications are rare but could include vaginal erosion, bladder neck obstruction, and infection. Initial followup after insertion is as frequent as weekly initially, extending to monthly, 3 months, 6 months, and 1 year thereafter depending on the woman’s independence, vaginal sensation, cognitive ability, and ability to remove, clean, and reinsert the pessary (Poma, 2000).

Pessary fitting requires expertise and extensive practice to gain competence; continence specialists may wish to nominate one nurse in their area to provide expert service rather than having several who only infrequently fit pessaries. Guidelines for pessary selection are outlined in Table 8.

Mechanical Urethral Occlusion Devices

Urethral occlusion devices or urethral inserts have been developed for more active women with stress UI for short, episodic use. Inserts are one-time-use, silicone tubes encased in a soft sleeve that are self-inserted. They are intended for daytime use, particularly during vigorous physical activities. The Reliance Urinary Control Insert® and FemSoft® (Miller & Bavendam, 1996; Sirls et al., 2002) are both reported to be effective, safe, and comfortable, contributing to increased quality of life. Side effects include discomfort, hematuria, bladder mucosal irritation, and symptomatic bacteriuria. The urethral patch (CapSure®, Re/Stor®) is a multi-use device that is applied over the urethra with adhesive gel that forms a watertight seal. Success rates are reported between 44% to 97% (Bellin et al., 1998; Versi, Griffiths, & Harvey, 1998) and adverse effects seem to be minimal. Potential side effects are mucosal irritation due to the suction effect or bacteriuria.

Penile clamp. Active males with stress UI may choose to use the penile clamp. The clamp should be applied and tightened just enough to stop the flow of urine with a gentle to moderate cough flow (Moore et al., in press). Penile clamps, especially the Cunningham, have utility in selected men who are cognitively intact, have good genital sensation and manual dexterity, no comorbid circulatory conditions such as diabetes, and who desire this type of management device. Although potential complications include penile ischemia, skin damage, and tissue necrosis, there is little documented evidence of these problems.

Equipment for promoting continence. Bedside commodes, male and female urinals, and different types of bedpans enable individuals with temporary or permanent mobility impairments to maintain continence. Bedside equipment may help achieve nighttime continence and ensure safety. Special consideration should be given to nighttime lighting, having a clear pathway uncluttered by scatter rugs, clear toilet access and safe level of seat height, and treatment of polyuria and nocturia. The Canadian Continence Foundation, Continence Foundation (UK), and the National Association for Continence all publish catalogues providing extensive information about products, devices, and equipment for managing UI. The Simon Foundation also offers educational resources for health professionals, consumers, and caregivers.

Nursing Implications/Key Points

- Absorbent products are effective in increasing social continence and quality of life. Selecting the best product for
the amount and frequency of UI along with an appropriate skin care regimen will prevent adverse sequelae. When the individual is able to toilet, product selection should facilitate, not hinder, the toileting process.

- Disposable products may be superior to reusable products with regard to cost and skin protection; however, reusable products may be effective for low-volume UI. Because of waste management and costs, research into improved product design, skin protection, laundry, cost, comfort and fit, and ecological impact of both disposable and reusable products is needed.

- Aggressive prevention of perineal dermatitis is best accomplished by judicious use of high-quality absorptive products, avoiding tight absorbent products so that excess moisture and heat does not lead to skin maceration, and using skin cleansers, moisturizers, and moisture barriers to maintain an intact epidermal barrier.

- Research is needed to determine optimal products and procedures, delivery systems for skin care therapeutics, biologic aides to improve skin resilience, and use of absorbent products with skin-protecting factors engineered into the material.

- Indwelling urinary catheters are associated with much comorbidity and are appropriate only in medically indicat-

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**Table 8. Guidelines for Pessary Selection**

<table>
<thead>
<tr>
<th>Prolapse</th>
<th>Urinary Stress Incontinence</th>
<th>Cystocele</th>
<th>Rectocele</th>
<th>Incompetent Cervix</th>
<th>Retro Displacement</th>
<th>Most Commonly Used</th>
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<td>Smith, Hodge, Risser</td>
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Courtesy of Milex Products Inc. Chicago, II.
ed circumstances. Catheter care should be based on individual assessment and evidence-based recommendations rather than regimented catheter routines.

- Pessaries and urethral occlusive devices are effective non-invasive approaches for select patients with pelvic prolapse and stress UI. Regular follow-up is critical to prevent complications.

- Continued research needs to be done on different types of pessaries and urethral occlusion devices for UI to increase efficacy, comfort, safety, ease of use, and patient acceptability.

- Since nurses have contact with patients in many diverse health care settings, it is vital that they initiate assessment of UI and recommend management strategies to promote social continence, dignity, and quality of life for individuals with incontinence. Particular attention should be given to the frail elderly, as management strategies are important to preventing life-threatening skin infections, pressure ulcers, and bacteremia. Continence products are an adjunct to other management strategies and it is critical that all patients suffering from urinary incontinence receive a full assessment from a health care practitioner knowledgeable in the field.

Summary

Living with UI does not foreshadow a life of social isolation, embarrassing incontinent episodes, hygiene or odor disasters, or recurrent skin and urinary tract infections. A wide range of products, devices, and equipment is available to improve the quality of life for those who have UI. Nurses play a key role in identifying individuals with continence issues, educating them and their families about the importance of assessment, and informing and guiding them to treatment options. Such actions can dramatically improve the quality of life of an individual and his/her family.

References


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