Incontinence Products And Devices for the Elderly

Diane K. Newman

More than 7.4 million people over the age of 65 are estimated to have urinary incontinence (UI). The median range of prevalence estimates in elderly women is 30% to 50%. Aging and medical conditions such as diabetes, stroke, atrophic vaginitis, incomplete bladder emptying, rheumatoid arthritis, and prostatitis, place an elderly man or woman at increased risk for UI. These same conditions can lead to complications of using products and devices for managing urine leakage. There are significant limitations to the use of these products and devices especially in elderly patients. There is a need for evidence-based research and clinical protocols on the use of products and devices to manage UI (Newman, 2003). However, in many elderly patients, they offer the only option in the management of UI.

Absorbent Products

Absorbent incontinence products include a variety of designs: (a) perineal pads or panty liners for slight or light incontinence, (b) undergarments and protective underwear for moderate to heavy leakage, (c) guards and drip collection pouches for men, and (d) adult briefs (diaper-style products) for moderate or heavy incontinence (Newman, 2002). Figure 1 shows the type of absorbent product with their absorbencies. These products absorb or contain urine leakage and are either disposable or reusable. There are also underpads of differing sizes for bed and furniture protection that are disposable and reusable.

Although there are many well-known brands which are readily available and advertised, there is little information or research available to base a decision for use. Although systematic reviews of absorbent products are available (Clarke-O’Neill, Pettersson, Fader, Cottenden, & Brooks, 2004; Dunn, Kowankop, Paterson, & Perry, 2002), most of the products evaluated in this research are not comparable to products available in the United States.

Unlike feminine hygiene products that are designed to absorb menstrual blood, absorbent incontinence products are designed specifically to absorb and contain urine. These products have a surface area that is against the perineum which collects and transmits the urine to a super absorbent polymer inner core (Clarke-O’Neill et al., 2004). This absorbent inner core allows the urine to spread throughout the entire pad facilitating absorption capacity while preventing urine leakage and odor. They also have devices and products to contain or collect the urine are part of the management of bladder dysfunction, particularly urinary incontinence (UI) (Newman, Bliss, & Fader, in press). The aim of continence nurse experts and those who care for incontinent individuals during the past decade has been to greatly decrease the indiscriminate use of absorbent pads and garments, external collecting devices, and indwelling catheterization, through the successful treatment of urinary incontinence (UI) with behavioral interventions, drug therapies, and new surgical procedures. However, these products and devices can be beneficial for persons who are elderly, fail treatment and remain incontinent, who are too ill or disabled to participate in behavioral programs, who cannot be helped by medications, or who have a type of UI that cannot be alleviated by other interventions (Newman, 2003). The judicious use of products to contain urine loss and maintain skin integrity is a first-line defense for these patients (Fantl et al., 1996). Urinary collection devices and products that are appropriate for elderly patients, that are used by nurses in all clinical settings, and are available at local pharmacies, retail stores, medical equipment dealers or directly from manufacturers are discussed.

Note: CE Objectives and Evaluation Form appear on page 334.
a waterproof back for added protection. Newer products have a “breathable” plastic film layer with microporous openings that allow water vapor to pass to the outside while retaining fluid and odors. There is less skin breakdown in patients using disposable diapers with absorbing properties. Reusables are made of cloth material with a rayon or polyester fiber core. The number, size, and arrangement of these fibers are a factor in the absorption.

Personal preferences in products may vary. However, despite the technology, the clinician and patient must remember that every absorbent product has a saturation point, depending on the frequency, the quantity of urine loss, and the changing schedule.

When choosing an absorbent incontinence product for an older patient, consider the following:

- Gender: There are specific products for men called “guards” that are held in place inside the front of regular underwear with an adhesive strip. Drip collectors attach to underwear, placing the penis inside, allowing the pad to absorb urine leakage (see Figure 3B).
- Ease of use in those patients who are independent and self-toileting but need protection for occasional urine leakage. Products that promote independence include undergarments which are designed with a form-fitting large pad that extends to the waist and is held in place by elastic side straps using Velcro or buttons.
- Selection of a more absorbent product in those patients

Other products have double waist elastics with Velcro fasteners (see Figure 2). In general, undergarments can be easily self-removed and self-applied without having to completely remove outer garments. However, the button type undergarment may be more difficult for older adults with arthritis to manipulate. A very popular product that is often seen in the more active older adult patient is protective underwear that is pulled on like cloth underwear and has a “natural feel.” A nice addition to this product is refastenable tabs which allow changing without removal of outer clothing.

Adapted from Newman (2002). Photo courtesy of Kimberly Clark, makers of Depend™ and Poise™ products.

**Figure 1. Absorbent Products**

![Absorbent Products Diagram](image-url)
who are not capable of maintaining continence independently or through regular toileting or other measures. The adult brief (diaper) is used for severe UI and may be appropriate (see Figure 3A). This is especially true if the patient has double incontinence, both fecal and UI. The brief can be easily applied to the patient who is primarily bedbound.

- **Cost:** Many elderly patients are on fixed incomes. “Homemade” products may be the best option as patients will invent their own method of protection. They will usually throw away the self-made product as it becomes saturated.

- **Use of panty liners or perineal pads:** These attach to the underwear or panties with an adhesive strip and side gatherers for fit in women with small or slight UI. Some are designed with a wide front or back for larger volumes of leakage. These are preferred for their discreetness (Baker & Norton, 1996). McClish, Wyman, Sale, Camp, and Earle (1999) reported that 77% of women who enrolled in a clinical trial for UI used a perineal pad at least once per week. This study also showed that women used lower-cost products such as menstrual pads rather than specific incontinence pads. Women still choose a small, discreet pad like a panty liner despite the need to change the product more frequently. Overall, the aim should be to select the best product considering comfort, ease of application/removal, containment of urine, control of odor, and cost.

**Toilet Substitutes**

Toilet substitutes are portable devices that substitute for a regular toilet. There are two general categories: one is commode seats or bedside commodes and the other is hand-held devices such as a bedpan or urinal. These devices are appropriate when (a) there are inaccessible toilet areas, (b) doorways and bathrooms are too narrow for access (for example, when using a walker or a wheelchair), (c) nocturnal frequency and urgency is a significant problem, and (d) decreased mobility. Current designs have changed little and none have been specifically designed for frail or disabled elderly patients.

Some **commodes** have drop
arms and adjustable heights to allow for individual needs. A bedside commode can be placed close to the bed for easy use at night or on the floor of the house that does not have a bathroom. Problems with commode design include difficulties with side-ways transfer, ineffective brakes causing commodes to move during transfer, and poor trunk support (Malassigne, Nelson, Cors, & Amerson, 1995; Nazarko, 1995). There are general areas that need consideration when selecting a commode: (a) height and weight of the person using the commode, (b) mobility and dexterity, especially if the person will need to empty and clean the commode, (c) cost as most insurers will pay for at least one commode per person with a letter of medical necessity, (d) type of seat as a plastic seat with a large soft surface area may allow even distribution of body weight, and (e) seats with grab bars on either side are most often recommended to prevent falling and to aid with rising. If a portable commode is not feasible, consider the use of a raised toilet seat (referred to as toilet raisers) that are placed over a regular toilet that allows patients to get up and down on their own, thus allowing for self-toileting (see Figure 4).

Bedpans are generally the least-effective container for maximizing continence as they are difficult to position without creating excess pressure on the sacral area. Also, they do not promote correct position to aid in complete bladder emptying. The most successful bedpan is a “fracture pan” that is commonly used in the acute care setting in post-surgical patients.

The basic design of the urinal has remained unchanged for years although disposable plastic variants are more often used. Urinals have the potential to enable elderly men and women who experience difficulty accessing a toilet to regain continence. They are useful for patients who have severe mobility restrictions, particularly when visiting places with inaccessible restrooms, when traveling, or in those patients who are confined to a bed or chair. It is very difficult to find a female urinal that can be used effectively by women with very poor mobility. There are difficulties both with positioning the urinal, enabling drainage towards the front, and providing sufficient volume without producing a cumbersome product (Fader, Pettersson, Dean, Brooks, & Cottenden, 1999; MacIntosh, 1998). For women, the most successful urinal is one that cups the perineal opening (see Figure 5). This type of urinal is more likely to be successful when used in the standing or squatting positions. Most urinals have handles so they can be placed next to the patient, can be hung on a bedrail, wheelchair, or walker, or can be laid flat on the bed. For men, there are rehab, spill proof urinals with large funnel openings to deal with a retracted penis (see Figure 6A). Often these rehab urinals have a flat bottom so that they can be placed on the bed. The openings in rehab urinals have a flange that extends into the urinal and does not allow backflow even when held almost upside down.

Catheters

Catheters are an integral part of managing bladder dysfunction, both urinary retention and UI, but the actual number of elderly patients who use a catheter indefinitely to manage UI or because of chronic urinary retention has not been well documented in the medical or nursing literature. The different catheters used and more frequently occurring complications are reviewed in Table 1. An indwelling urinary catheter consists of a flexible tube inserted in the bladder (either via the urethra or a suprapubic opening), held in place with a retention balloon (see Figures 6B & C) and attached to a drainage bag (see Figure 6D). Urethral catheters are inserted and managed by nurses. Most are secured with a strap (see Figure 22). Suprapubic catheters are initially inserted by an urologist through a surgical incision made 2
cm above the pubic bone with long-term management mainly by nurses.

The use of an indwelling urethral (Foley) catheter is indicated for long-term use (>30 days) in certain instances: (a) when urethral obstruction or urinary retention is present and surgical interventions and/or the use of intermittent catheterization is not feasible, (b) if irreversible medical conditions are present (for example, metastatic terminal disease, coma, end stages of other conditions), (c) presence of significant pressure ulcers that are not healing because of continual urine leakage, and (d) instances (for example, homebound patients) where a caregiver is not present to provide incontinence care (Center for Medicare & Medicaid Services, 2004; Fantl et al., 1996; Mercer Smith, 2003). Unlike other continence products an indwelling catheter is an invasive device and is associated with significant complications, in particular, infection and obstruction of the catheter by proteus mirabilis biofilms (Morris, Stickler, & Mclean, 1999), which in turn can result in urethral trauma and blockage of the catheter. Long-term use of catheters provides access for bacteria from a contaminated environment into a vulnerable body organ and system. As a result, catheter-associated urinary tract infections (CAUTIs) are the most common type of infections that are acquired in hospitals and long-term care facilities. In addition to catheter-related complications, there are also nursing care problems arising from long-term indwelling catheters (see Table 2).

There is a wide range of catheter materials available and the material selected should be chosen for the following characteristics: comfort, presence of latex-sensitivity, ease of insertion and removal, and ability to reduce the likelihood of complications such as urethral and bladder tissue damage, colonization by micro-organisms, and encrustation. Catheter types include (a) silicone-coated latex catheters which have a chemically bonded coating of silicone elastomer or Teflon which prevents urethral contact with the latex; (b) Teflon-coated catheters which are felt to reduce the rate of absorption of water; (c) 100% silicone catheters which are...
Table 1.
Catheter-Related Complications and Approaches

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<tr>
<th>Catheter</th>
<th>Complications/Problem</th>
<th>Approaches</th>
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<tr>
<td>Indwelling catheter</td>
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  *Bacteriuria usually occurs within 2 to 4 weeks after the catheter is inserted.*  
  *The most important risk factor for bacteriuria is catheterization.*  
  *There are three catheter-associated entry points for bacteria: the urethra meatus, the junction of the catheter/bag connection, and the drainage port of the collection bag.*  
  Catheter-associated bacteriuria is usually asymptomatic, uncomplicated, and resolves after the catheter is removed.  
|                       | **Therefore, insertion of an indwelling catheter should be performed under aseptic technique.**  
  **Microorganisms that are present on the meatus or distal urethra can be transferred directly into the bladder through three entry points. During insertion of the catheter is the first entry point (see Figure 21) (Sedor & Mulholland, 1999). The second entry point is the junction at the catheter tubing and drainage bag. If at all possible, the catheter should never be disconnected from the drainage tube as bacteria can enter the system. Preconnected sterile insertion sets are available (see Figure 6D). The third point of entry is the drainage bag outlet port. All drainage bags should be kept off the floor and the outlet tube should not be dragged. Selecting a bag that prevents migration of bacteria through this port (antireflux chamber) is preferable.**  
  **Two catheter hygiene principles should be used to prevent bacteriuria: use a “closed” system and remove the catheter as soon as possible (Warren, 1997).**  
  **In the past, standard practice was catheter irrigation to “wash out” the bacteria. However, the use of such irrigation to prevent or eradicate bacteria in indwelling catheters is ineffective, as more organisms will gain entry to the irrigated catheters through disconnection of the system.**  
  **Urine cultures should only be obtained when there is suspected clinical sepsis based on objective signs or symptoms. If a symptomatic infection does occur, change the catheter and obtain the urine specimen from urine draining through the new system as the old system urine may not reflect bladder urine but “catheter” urine.**  
  **To prevent or minimize CAUTIs, maintain sterile, closed drainage system, avoid disconnecting the catheter from the drainage bag, empty the collection bag regularly, and keep drainage bag below level of the bladder.**  
  **If patients with VRE are identified and isolated at the time of admission to the LTC facility, the chance of spreading the VRE is low (Silverblatt et al., 2000; Terpenning et al., 1994). Despite common belief by LTC staff, an indwelling catheter does not “contain” these infections. In addition to identification and isolation of residents, staff should practice strict handwashing and standard precautions (single room, gowns, gloves, and additional cleansing) to prevent spread due to environmental contamination (Gray, 2004).**  |
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<tr>
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<td>Indwelling catheter</td>
<td><strong>Urosepsis</strong> can result from frequent and repeated catheter-associated urinary tract infections (CAUTIs) leading to sepsis. Mortality has been documented as more than three times higher in catheterized patients than in noncatheterized patients.</td>
<td>Research has proven that use of prophylactic antibiotics and/or antimicrobials is not of any benefit in preventing symptomatic UTI.</td>
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|                          |  **Urethral damage**  
Urethritis, inflammation of the urethral meatus, is seen and may be due to frequent insertion of catheters.  
**Erosion of the urethra** especially in men.  
**Creation of a false passage** can occur primarily in male patients with persisting urethral strictures. Men with enlargement of the prostate gland are most at risk.  
**Fistula** formation develops in females between the bladder and the anterior vaginal wall. Many times the female patient who has developed a fistula will present with complaints of leakage and drainage from the vagina. Fistula formation occurs in men between the prostate and urethra. | Securement of catheters with some type of anchor strap or device (see Figure 22) to prevent catheter tension on the distal urethra at the meatus is recommended (Hanchett, 2002).  
Consider insertion of a suprapubic catheter which may reduce the risk of urethral erosion and fistula formation especially in men. |
| External (condom) catheters |  **Epididymitis** due to urethral and bladder inflammation and scrotal abscess are seen in men. |                                                                                                         |
|                          |  **Hematuria** occurs in patients who have long-term catheters and is a possible sign of CAUTIs, bladder cancer, or stones. |                                                                                                         |
|                          |  **Bladder stones** can occur in at least 8% of patients with indwelling catheters.  
**Bladder cancer** can occur in patients. Long-term catheter users are the most at risk for developing squamous cell carcinoma. | Annual cystoscopy by an urologist is recommended to determine the environment within the bladder and the presence of stones or cancer. |
|                          |  **Infection** risk is less than with indwelling catheters because it avoids instrumentation of the urethra.  
**Skin maceration and irritation** secondary to catheter friction. | Changing the catheter every 24 to 48 hours will decrease chance of infection. In hot and humid weather, condoms need more frequent changing.  
Instruct the man to trim the hairs on the shaft and base of the penis so they won’t stick to the adhesive tape on the inside of the catheter thus increasing skin irritation.  
Washing and drying the penile shaft before each catheter change will protect the skin from urine. If the patient is at risk for possible breakdown, consider applying a barrier film product when using the device.  
Avoid use of betadine solution since this can irritate the skin. |
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<td><strong>External (condom) catheters</strong></td>
<td><em>Phimosis</em> is present when the orifice of the foreskin is constricted, preventing retraction of the foreskin over the glans. This can occur as a result of over-constriction of the penis from a condom catheter (Fader et al., 2001b).</td>
<td>Consider use of a:</td>
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<td>• Reusable system that is a nonadhesive condom (see Figure 24B).</td>
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<td>• Foam-and-elastic reusable band fastened with Velcro to secure a nonadhesive catheter.</td>
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<td>• 100% silicone material which will cause less irritation and adverse reactions and are recommended for persons who have an allergy to latex. The clear material of these devices allows for skin monitoring (see Figure 23).</td>
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<td></td>
<td>• Avoid overconstriction of the penile shaft if using catheter with hydrocolloid strips that have adhesive on both sides that can be applied around the penile circumference. There are two types of strips: adhesive-coated foams and adhesive-barrier strips (see Figure 24A). Foam straps are not elastic, so they will not stretch. Barrier strips stretch and have the capacity to return to original size and shape.</td>
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<td>• Catheters with circumferential band strips may be too restrictive for the shaft of the penis and should only be used by patients who are cognitively intact and have penile sensation.</td>
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<td>• Instruct patient to use meticulous attention to handwashing before and after catheterization.</td>
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<td>• Immediately after use, catheters should be rinsed under running lukewarm tap water for at least 30 seconds.</td>
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<td>• Allow catheter to dry and store in a clean, ventilated container.</td>
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<td>• To decrease incidence of UTIs:</td>
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<td>• Increase catheterization frequency (base on the urine volume; general rule should not exceed 400 to 500 mls).</td>
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<td>• Change type of catheter – consider catheters with “introducer tip.” They bypass the colonized 1.5 cm of the distal urethra and may decrease incidence of UTI (Giannantoni et al., 2002).</td>
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<td>• Switch to new, sterile catheter each time. (Medicare will cover six catheters/day or 186 catheters/month with medical necessity, which includes two documented UTIs and laboratory-positive urine cultures with a medical necessity letter.)</td>
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<td>• Rule of thumb is to use catheter (for example, 14-French gauge units) with smallest diameter possible that allows for adequate urine drainage, but causes less urethral irritation, and less occlusion of periurethral glands.</td>
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<td>• Liberal use of water-soluble lubricant along entire length of catheter will decrease urethral trauma especially in men.</td>
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<td><strong>Intermittent catheters</strong></td>
<td><em>Bacteriuria</em> is seen in 50% of clear intermittent catheterization (CIC) patients and is often referred to as “colonization.” Rarely leads to urinary tract infections (UTIs). Majority of patients usually have no symptoms and therefore should not be treated with antibiotics.</td>
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<td><em>Urinary tract infections</em> – 20% annual incidence, most common cause of sepsis and mortality in patients. More prevalent in patients who have higher residual urine volumes (&gt; 400 cc) at the time of catheterization. Chronic pyelonephritis rarely develops.</td>
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<td><em>Urethral damage</em> in men is similar to the problems seen with indwelling catheterization and include:</td>
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<td>• <em>Urethritis</em>, inflammation of the urethral meatus, is seen and may be due to frequent insertion of catheters especially if there is a forceful catheterization against a closed sphincter.</td>
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thin-walled, more-rigid, larger-diameter, drainage lumen catheters; (d) hydrogel-coated latex catheters which absorb water to produce a slippery outside surface; and (e) catheters coated with silver alloy or antimicrobials. There is debate as to which catheter may decrease CAUTIs. The large diameter of silicone catheters may prevent the formation of biofilms as they are more compatible with the lining of the urethra and do not allow build-up of protein and mucous. There are reported increases in latex allergies and reactions in patients with indwelling catheters.

In an attempt to prevent colonization, some catheters have been coated with antibiotics. Usually the outer-wall and inner-drainage lumen of these catheters are impregnated with an antibacterial agent (such as nitrofurazone), which exudes from the catheter over a period of days after insertion (Johnson, Delavari, & Azar, 1999). It is unclear if these catheters, which are more expensive, have any effect on the development of infection in patients requiring long-term catheterization. Silver-coated catheters are believed to cause less inflammation and have a bacteriostatic effect when catheters are used on a short-term basis (Karchmer, Giannetta, Muto, Strain, & Farr, 2000).

Catheters vary in tip shape (Coudé or Tiemann) and size of the lumen. Catheters are sized according to the French (FR) scale; each unit equals 0.33 mm of internal diameter.

**Suprapubic Catheter**

A suprapubic catheter may be used in elderly persons who need to have a catheter in place for a long period of time because it is more convenient for the patient and caregiver. Suprapubic catheters have a higher rate of satisfaction and a lower risk of CAUTIs than indwelling urethral catheters. Swelling at the site of insertion, bleeding, and bowel injury can occur at the time of catheter insertion; however, these incidents are rare. A suprapubic catheter is preferable because it decreases the risk of contamination with organisms from fecal material, decreases the risk of infection, and eliminates damage to the urethra. The anterior abdominal wall possesses a lower microbial load than the periurethral area and has a lower risk of infection (Sedor & Mulholland, 1999). Additional advantages are that the catheter is easier to change and clean (Fantl et al., 1996). However, clinical protocols for long-term medical and nursing management of suprapubic catheterization are lacking.

**External Catheter Systems**

External catheter (condom) systems, referred to as penile...
### Table 2.
Common Problems with Long-Term Indwelling Catheterization

<table>
<thead>
<tr>
<th>Problem</th>
<th>Causes</th>
<th>Intervention</th>
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<tr>
<td>Inadvertent dislodgment (catheter falling out usually with balloon inflated)</td>
<td>Occurs in 41% of patients. Due to: • Patient pulls the catheter out due to confusion, discomfort, or doesn’t like or want the catheter. • Secondary to catheter tension where increased pressure and weight on the catheter causes it to dislodge. • Detrusor overactivity or bladder spasms will be cause expulsion of catheter with balloon intact.</td>
<td>Consider alternative suprapubic catheter or other urinary collection device. Use a securement device or strap. Consider changing catheter more frequently. Consider the use of an anticholinergic medication (for example, oxybutynin, tolterodine).</td>
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<tr>
<td>Leakage of urine around the catheter (referred to as catheter bypass)</td>
<td>Occurs 65% of the time. Due to: • Bladder spasms. • Infection. • Urethral obstruction. • Catheter size, too large catheter. • Secondary to an irritated bladder mucosal caused by long-term catheter use. • Constipation and/or fecal impaction.</td>
<td>If infection is suspected, obtain urine culture. Consider changing catheter more frequently. Usual medical practice is to change indwelling catheters every month but most experts feel that changing schedules should be arranged according to the patient’s needs (Gray, 2004). Obtain bowel pattern to ensure regularity.</td>
</tr>
<tr>
<td>Obstruction or blockage of catheter</td>
<td>Occurs in over 50% of patients. Due to: • Encrustation caused by the collection of crystallization of protein or mucus plugs. Crystalline deposits can cover the balloon and obstruct the eye-hole and lumen of the catheter. Formation of encrustation usually occurs around the tip of the catheter, around the balloon, or within the catheter lumen. Catheters are a good medium for bacterial growth as bacterial biofilms (layers of organisms) adhere to the many surfaces of the catheter.</td>
<td>Catheters should be changed proactively according to the patient’s usual pattern of catheter life rather than waiting till infection or encrustations occur. If an infection occurs frequently or obstruction is common, the catheter should be changed more often. Keep record of when catheter-related problems occur so a changing schedule can be determined. Maintaining a high fluid intake produces less concentrated urine, which impairs bacterial growth in the bladder and catheter system. The flushing action of large quantities of diluted urine will reduce the likelihood of bacteria ascending the bag and catheter. If encrustation causes occlusion of the catheter, the entire system must be changed. As bacteria migration occur intraluminally and along the outside of the catheter, it is recommended that the drainage bag be emptied at least every 4 hours, if at all possible. The benefit of acidification of urine with cranberry products is unclear (Gray, 2002).</td>
</tr>
<tr>
<td>Catheter/balloon malfunction</td>
<td>Failure of the balloon to deflate due to malfunction of inflation valve; obstruction of the inflation channel by external encrustation of the balloon.</td>
<td>Cut the balloon at the port distal to the junction. If this fails to deflate the balloon, push narrow-gauge guide wire through the balloon port into the balloon to allow the fluid to drain. Do not inject air, water, or any chemical in the balloon port to rupture the balloon.</td>
</tr>
<tr>
<td>Pain and urethral discomfort</td>
<td>More than 50% find catheters painful (Saint et al., 1999). Discomfort may be secondary to catheter size (too large) or occlusion of periurethral glans.</td>
<td>Decrease catheter size. Use large amounts of lubrication at time of insertion to decrease pain and discomfort. Consider removal of catheter and alternative management.</td>
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Adapted from Newman (2002).
sheaths, direct urine into a drainage bag and are used most commonly by men who use a wheelchair and those who have moderate to severe UI. Adhesive strips (see Figure 24A) and other fixation devices have now largely been replaced by self-adhesive sheaths, which are safer and more popular with users (see Figure 7A). Sheaths have changed little in appearance over the last 20 years, although the material of newer sheaths is more likely to be silicone than latex (Edlich et al., 2000) (see Figures 7B, 7C, 8, & 23). Men at a VA medical center found the condom catheter more comfortable, less painful, and less restrictive on their activities (Duffy et al., 1995). The only complaint was from urinary leakage (Saint, Lipsky, Baker, McDonald, & Ossenkop, 1999). It is very common for elderly men to have a “retracted” penis. An external catheter that adheres to the glans penis may be an option in these men (see Figures 8 & 24C). There are adhesive urinary pouches that are similar to ostomy appliances that may be more appropriate (see Figure 9). If an elderly patient has difficulty with dexterity and manipulation of small objects, the ease of application and removal of an external catheter may be an issue. Identification of a caregiver or family member who will apply the catheter must be considered. In an institution, the staff can be taught to apply these catheters.

Because there are several sizes of condom catheters, it is important to use a measuring or “sizing” guide supplied by manufacturers. When choosing a size, allow for nocturnal erections in the sizing of the device. A medical adhesive (commonly used when applying ostomy bags) can be applied around the circumference of the penis to ensure that the catheter “adheres” to the penis (Newman, 2000). The adhesive must be dry before rolling on the catheter. A skin barrier product can be applied to the penis to protect penile skin from breakdown secondary to repetitive application and removal of an adhesive device.

There are external collection devices for women that funnel the urine via a pouch to a tube and collection bag (see Figure 10). However, none have proven to be totally useful for elderly...
women in wheelchairs or those who are bedbound.

**Urine Drainage Bags**

Both indwelling and external condom catheters are connected to a *drainage bag* which acts as a reservoir for urine drained from the bladder (see Figures 11A, B, & C). An overnight or bedside bag can hold 1,500 to 2,000 cc. The bag should be hung over the side of the bed below the level of the catheter so that the urine will flow easily and prevent urine backflow.

A leg bag is a smaller collection bag for use in the ambulating, elderly patient as it allows more freedom of movement. This smaller bag is more discreet and can be attached to the calf and be concealed under clothing (see Figures 12A & B). Leg bags come in different sizes (horizontal or vertical) and are made from a variety of material. The calf is usually the easiest place on which to strap a leg bag, but women who wear skirts will need to use a thigh bag or waist belt. The smaller bag can be strapped to the leg (thigh or calf) or held in place with a net sleeve or stocking and is easy to hide under clothing. Strips that are too tight can restrict circulation resulting in lesions (see Figure 13). Attention should be paid to

*the selection of the drainage port as some patients may be able to manipulate a flip-flow valve but not a sliding type. A bag of urine can be quite difficult to accommodate discreetly on the body and can present problems with appearance and noise from urine movement. More recent innovations include a bag strapped onto the abdomen (belly bag) (see Figure 14).*

**Intermittent Catheterization**

*Intermittent catheterization*
involves the regular introduction of a catheter to empty the bladder and then removal of the catheter; this leaves the patient catheter-free in between. The catheter (a flexible, fine tube) is passed into the bladder via the urethra; urine is drained and the catheter removed and washed or discarded (see Figures 15A, B, & C). Research has shown that regular bladder emptying reduces intravesical bladder pressure and improves blood circulation in the bladder wall making the bladder mucous membrane more resistant to infectious bacteria. Intermittent catheterization (IC) dates back thousands of years (with use of silver, gold, and then stainless steel) but the practice has only become more acceptable over the last 40 years when it was pioneered by an American urologist, Dr. Lapides, who showed that “clean” as opposed to “sterile” self-catheterization did not increase the incidence of renal damage or urinary tract infections. Clean intermittent catheterization (CIC) is most used in elderly patients with urinary retention but is also a treatment for overflow UI secondary to urethral obstruction.

Sterile technique is used for intermittent catheterization in acute care facilities because of the high risk of nosocomial infections. However, there is very little data about the safest method in long-term facilities. The use of long-term antibiotics in people regularly using CIC is not necessary because such long-term use is associated with the presence of resistant bacterial strains. But, if an infection occurs, it should be treated.

Age is not a deterrent to recommending CIC. Considerations include (a) the physical ability of the person who will perform the catheterization; (b) the willingness and self-discipline of both patient and caregiver; (c) presence of leg spasms and/or decreased flexibility or balance; (d) decreased finger/hand dexter-
ity, intentional tremors, and poor eyesight of person performing the catheterization; (e) decreased perineal sensation; and (f) obesity that prevents adequate visualization of the urinary meatus in the female patient. Aids such as a catheter holder can be helpful in patients with decreased finger and/or hand dexterity or grip (see Figure 16A).

There are two main designs of intermittent catheter: those that have a hydrophilic coating (which becomes slippery when immersed in water to aid insertion) (see Figures 16A, B, & C) and those with no coating (see Figures 15A, B, & C). There may be large differences in the slipperiness of the coatings, with some catheters showing a marked propensity to “stick” to the wall of the urethra on removal (Fader et al., 2001a). However, to date there has been no evaluation comparing coated and noncoated catheters. The clinician who instructs the patient usually makes the catheter choice. Red rubber catheters are more flexible and some elderly patients find them more difficult to insert. The preferred catheters used for CIC are clear and made of plastic material. Polyvinyl chloride (PVC) are the most common as they are flexible but firm, require lubrication, and are usually reused for up to 1 week (see Figure 15A). Prelubricated hydrophilic catheters are coated with a substance that absorbs water and binds it to the catheter surface (see Figures 16A, B, & C). Prior to insertion this catheter is immersed in water. This extremely slippery layer of water stays on the catheter during insertion and withdrawal. This type may be indicated for patients who experience particular discomfort during catheterization or have difficulty with other types of catheters (Diokno, Mitchell, Nash, & Kimbrough, 1995). Self-contained systems are closed sys-
tems that provide sterile catheterization and are 100% latex-free, prelubricated hydrophilic or PVC catheters. The catheter passes through a special guide mechanism at the top of the pocket (see Figures 17A, B, C, & 18). This guide provides two main benefits: it keeps the catheter straight as it is advanced and, when squeezed, it prevents the catheter from slipping during insertion. Once inserted the urine drains into the bag. The use of this system may decrease chances of infection. In patients who have bacterial, nonspecific urethritis, a catheter that contains a coating of antibacterial agent (for example, nitrofurazone) in the outer layer to produce local antibacterial activity may be indicated.

Catheter tip configuration is also important when choosing a catheter for CIC. An olive, Coudé or curved-tip catheter may help a woman in identifying her urethra (see Figure 19). Using a Coudé tip catheter can make it easier for an elderly man to advance the catheter past the prostate gland (see Figure 20). Both of these types of catheters have “blue line guide strips” to help patients maintain correct position for insertion — curved tip is pointed up to the head. An additional consideration when teaching an elderly patient how to perform catheterization is the catheter length which is either 5 inches (for women) or 12 inches (for men).

The catheterization schedule should be based on the urine volume. As a general rule, bladder volume should not exceed 400 to 500 mls. When starting CIC, patients and/or caregivers should record the amount of urine drained from the bladder. If the patient voids, catheterization should always be performed after voiding.
Based on a person’s average output, catheterization is usually done three to four times during the day.

**External Compression Devices**

An *external compression device* or penile clamp can be used in men with UI. The device provides external urethral compression to create outlet resistance high enough to prevent urine leakage secondary to stress urinary incontinence (SUI). Often men will use these clamps after prostate cancer surgery to stop SUI or to prevent continuous urine leakage in elderly male patients. Usually the clamp is placed halfway down the shaft of the penis and then tightened to compress the urethra. The inside of the available clamps have a flexible, soft part made of soft foam that conforms to fit the penis. When closed, it should pinch off the urine flow without discomfort. A penile clamp should be used with caution and is only appropriate in men who have penile sensation, good manual dexterity, and will comply with proper care and use of the product. Usually the clamp should be released every 2 hours to promote circulation. Skin breakdown secondary to constriction, swelling, and urethral strictures can occur inside of the urethra if a clamp is left in place too long (Moore et al., 2004).

**Skin Care Products**

The skin of elderly persons is more fragile than younger persons. Skin care is integral to the use of most incontinence devices and products. Potential sources of excessive moisture on the skin include:

- Urinary incontinence.
- Fecal incontinence.
- Frequent washes.
- Nonabsorbent and/or poorly ventilated padding on the skin.
- Skin occlusion.
A skin care program should include skin assessment of the buttocks, coccyx, rectal area, scrotum/perineum, and upper thighs. Skin breakdown and erythema are directly related to exposure to urine and feces (Scardillo & Aronovitch, 1999).

Normally the skin is slightly acidic which helps prevent the invasion of bacteria, yeast, and fungus. This is often referred to as the “protective acid mantle” of the skin. Further, the presence of excessive skin surface moisture can contribute to growth of bacteria that can lead to skin breakdown and infection. When combined with changes in skin pH (into the alkaline range), the effect can be particularly devastating, promoting the loss of normal skin integrity in the person whose skin is already compromised by exposure to urine and feces.

When skin is subject to moisture from urine in combination with fecal matter, further skin trauma results. Prolonged exposure to urine and feces, moisture, and friction combine to macerate, abrade, and blister the skin over the buttocks and sacrum. Prolonged perineal exposure to wetness and increased temperature can result in the growth of microorganisms such as Candida albicans, resulting in candidiasis or yeast dermatitis. All of these factors work in concert to cause skin irritation, breakdown, and further skin problems. Friction can cause skin abrasion. Wet skin is more easily abraded by movement of skin against an object such as cloth and plastic in leg gaters and tape fasteners on adult briefs. Tape cuts are commonly seen in obese, elderly patients who are wearing a tight-fitting adult brief.

Proper use of soaps, skin products, topical antimicrobials, and gentle pH balanced cleansers; appropriate barrier products; and effective use of better quality and appropriate absorbent, incontinence products are all important in skin care management. Washing with regular soap and water is harmful to some patients with associated problems such as dry skin, contact dermatitis, and eczema (Newman, Wallace, & Wallace, 2001). As frequent washing with soap and water can dehydrate the skin, the use of a perineal rinse may be indicated in certain elderly patients.

Perineal cleansers are more skin-friendly than most bar soaps because they are convenient, time saving, and effectively remove the urine and/or feces without patient discomfort. These skin cleansers can help emulsify and loosen stool and urine to cleanse the skin. Additionally, no-rinse perineal cleansers are pH balanced for the skin, whereas bar soaps are almost always in the alkaline range. Some perineal cleansers are also formulated with topical antimicrobials that may decrease the bacteria on the skin. Fragrances, alcohol, and alkaline agents should be avoided when picking a cleanser.

The use of disposable wipes or wash clothes rather than toilet tissue may be more beneficial to the perineal skin of an older patient. These cleansers are also gentler to the skin than those used in bar soaps. Moisturizers preserve the moisture in the skin by either sealing in existing moisture or adding moisture to the skin. Moisturizers include creams, lotions, or pastes. Barrier products protect the skin from contact with moisture and decrease friction from absorbent products. However, if the skin barrier product is easily removed with water during cleansing, than it is not likely to promote a durable barrier to urine and feces. Paste is created by adding powder to an ointment. Paste does not need to be removed each time an area is washed.

Topical antifungal agents are available in ointment, powders, and creams. Some topical antifungals with anti-candidal activity are available as over-the-counter products (such as clotrimazole and miconazole). Topical antifungal cream should be applied after each incontinence episode and continued until the erythema is completely resolved. Do not use other barrier products when using antifungals.

Careful and close attention to skin care reduces the occurrence of skin breakdown in elderly patients whose urine leakage is being managed by devices and products (Scardillo & Aronovitch, 1999). It is important for the caregiver to carefully select the appropriate absorbent product, preferably one that minimizes the possibility of dermatitis. It has been shown that products designed to absorb moisture and present a quick-drying surface to the skin keep the skin drier and are associated with a significantly lower incidence of skin rash than cloth products.

Summary
With the increasing prevalence of UI in elderly patients, urology nurses should be familiar with products and devices that can contain or collect urine because there is very little evidence-based clinical research on management of these products. Nurses are in a difficult position when caring for these patients on a long-term basis. Continuing education on the current application is imperative. The National Association for Continence provides a Web site for additional product information (www.nafc.org) and a reference guide that is an excellent resource for product information. Their new publication, Discoveries, provides information about advances in products for incontinence.
References


