



WOCN[®] Wound, Ostomy, and
Continence Nurses Society[®]

REVERSIBLE CAUSES OF ACUTE/TRANSIENT URINARY INCONTINENCE

CLINICAL RESOURCE GUIDE



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Acknowledgments

Reversible Causes of Acute/Transient Urinary Incontinence: Clinical Resource Guide

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Reversible Causes of Acute/Transient Urinary Incontinence: Clinical Resource Guide

Introduction/Purpose

Urinary incontinence (UI) is the involuntary loss of urine, which can occur at any age, but is more common among older adults (Casey, 2011; Shenot, 2014). UI affects twice as many women as men up to 80 years of age, but over 80 years, women and men are equally affected (Casey, 2011). UI can decrease the quality of life for those affected, and many older adults are institutionalized because of the burden of incontinence on caregivers (Casey, 2011; Shenot, 2014). UI can be classified as either acute/transient or chronic (Doughty & Moore, 2016; Shenot, 2014). Acute/transient UI has an abrupt onset, typically lasts less than 6 months, is usually related to some reversible condition, and when the condition is corrected, the UI is often resolved (Doughty & Moore, 2016; National Kidney and Urologic Diseases Information Clearinghouse [NKUDIC], 2013). Chronic UI persists beyond 6 months, despite correction of reversible conditions (Doughty & Moore, 2016). It is important to differentiate between acute/transient and chronic UI because the onset of UI may be an early sign or manifestation of a potentially serious but reversible condition.

Caregivers in healthcare facilities need education about the causes of UI and the importance of their role in promoting continence. In a study by Ehlman et al. (2012), 82% of certified nurse assistants (CNAs), 50% of licensed practical nurses, and 38% of registered nurses believed that urinary incontinence was a normal part of aging. Staff who serve as the first-line caregivers of patients with UI, and in particular CNAs, require specific education about the causes of UI to achieve a successful program for continence management.

This clinical resource guide updates the previous *Reversible Causes of Urinary Incontinence: A Guide for Clinicians* (Wound, Ostomy and Continence Nurses Society [WOCN], 2007). The purpose of this document is to provide information to clinicians to facilitate the identification and correction of reversible causes of acute/transient UI. Ten common reversible factors, which cause acute/transient UI are discussed in this document including: genitourinary syndrome of menopause, urinary tract infection, stool impaction or constipation, restricted mobility and/or dexterity, irritants, pharmaceuticals, polyuria, urinary retention, delirium/mental status changes, and psychological conditions. This document provides an overview of the causative factors with a description and information about assessment, interventions, and management. For each of the causative factors, the following information is presented: definition, risks/etiology, signs/symptoms and clinical indicators, assessment parameters, tests/diagnosis, treatment/management options, patient/caregiver education, and indications for referral. In addition, a patient guide that addresses the reversible causes of acute/transient UI is included in the appendix.

Reversible Causes of Acute/Transient Urinary Incontinence

Genitourinary Syndrome of Menopause (GSM)		
Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> GSM, previously described as vulvovaginal atrophy (VVA) and atrophic vaginitis, is a newly adopted, comprehensive term that includes symptomatic VVA as well as lower urinary tract symptoms due to low estrogen levels (Portman & Gass, 2014; Shifren & Gass, 2014). 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> Genital dryness, irritation, burning, and/or itching of the vulva or vagina; dyspareunia or impaired sexual functioning due to the lack of lubrication; and post-coital bleeding (Portman & Gass, 2014). Urinary symptoms: <ul style="list-style-type: none"> Dysuria, urinary frequency/urgency (Minkin, 2013; Portman & Gass, 2014; Shifren & Gass, 2014). 	<p>Treatment/management options</p> <ul style="list-style-type: none"> Treat the symptoms of GSM if other causes for symptoms have been ruled out. Multiple therapeutic options are available, although they are often expensive and may be unaffordable (Sobel & Sobel, 2015). Nonprescription treatments include nonhormonal vaginal lubricants and moisturizers (Minkin, 2013; Pearson, 2011; Shifren & Gass, 2014).

Genitourinary Syndrome of Menopause (GSM)

Description	Assessment	Interventions/Management
<p>● GSM is a collection of symptoms related to a decrease in estrogen and other sex steroids that results in multiple physiological, biological, and clinical changes to the labia majora/minora, clitoris, vestibule/introitus, vagina, urethra, and bladder (Portman & Gass, 2014; Shifren & Gass, 2014). Symptoms affect up to 50% of older women and can be chronic and progressive (Portman & Gass, 2014).</p> <p>Risk/etiology</p> <ul style="list-style-type: none"> ● Over time, the decrease in circulating endogenous estrogen alters the microenvironment resulting in degenerative changes of the mucosal lining of the urethra, urinary bladder, vagina, and vulva. ● Also, as estrogen decreases, there is a decrease in vaginal epithelial glycogen, which is a nutritional substrate for epithelial cells and protective bacteria (i.e., predominantly the lactobacilli that help maintain the normal vaginal flora and pH of 3.5 to 4.5); the vaginal environment becomes more alkaline; and the risk of vaginitis/urogenital symptoms and UTIs increases (Pearson, 2011; Portman & Gass, 2014; Sobel & Sobel, 2015). ● The ovarian production of estrogen can also be interrupted by other external causes including (Pearson, 2011): <ul style="list-style-type: none"> ○ Radiation, chemotherapy, surgical removal of ovaries, and immunological disorders. ○ Smoking tobacco, which can reduce the bioavailability of estrogen, decrease vaginal blood perfusion, and increase atrophic changes. 	<ul style="list-style-type: none"> ○ Nocturia (Minkin, 2013). ○ Recurrent UTIs (Minkin, 2013; Pearson, 2011; Shifren & Gass, 2014). ● Clinical indicators from a pelvic examination: <ul style="list-style-type: none"> ○ Shortened, narrow vaginal canal with decreased moisture and elasticity with the following findings (Lynch, 2009; Pearson, 2011; Portman & Gass, 2014): <ul style="list-style-type: none"> ■ Introital retraction, urethral eversion or prolapse, and prominence of the urethral meatus. ■ Atrophy of the labia majora and minora, loss of subcutaneous fat, vulvar dermatoses, vulvar lesions, and sparse pubic hair. ■ Smooth, dry, pale vaginal mucosa; and a reduced quantity of poorly defined vaginal rugae. ■ Patchy erythema and/or petechiae within the vagina, or inflamed, friable mucosa that bleeds easily. ○ Abnormal vaginal discharge (Lynch, 2009; Pearson, 2011). ○ A cherry-red mass (caruncle) at the urethra from displaced urethral lining (Sajadi, Becker, & Rutchik, 2014). <p>Assessment parameters</p> <ul style="list-style-type: none"> ● History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. ○ Identify the menses status. Determine if the patient is perimenopausal or postmenopausal and if hormone replacement is being used. Natural menopause occurs on average at 52 years of age, but onset can vary from 40 to 58 years of age (Shifren & Gass, 2014). 	<ul style="list-style-type: none"> ● Low-dose vaginal estrogen is effective for persistent GSM symptoms, and it is recommended by the North American Menopause Society (NAMS) and the International Menopause Society (Minkin, 2013; Rahn et al., 2014; Shifren & Gass, 2014). ○ Topical vaginal products of estrogen and combined estrogen with progestin have been approved by the U.S. Food and Drug Administration (FDA) for vaginal symptoms (FDA, 2013). <ul style="list-style-type: none"> ■ Based on a systematic review/meta-analysis of 34 randomized controlled trials (RCTs) or quasi-randomized trials, incontinent women who received vaginal estrogen reported improved UI symptoms compared to placebo; conversely, women who used systemic hormone replacement (oral) therapy with conjugated equine estrogen, with/or without progestogens, reported worsening of UI (Cody, Jacobs, Richardson, Moehrer, & Hextall, 2012). ■ Another systematic review of 44 RCTs and prospective comparative studies reported that compared to placebo, vaginal estrogens (i.e., creams, tablets, suppositories, rings) decreased dryness, dyspareunia, urinary urgency/frequency, stress and urgency UI, and UTIs (Rahn et al., 2014). ○ Contraindications, side effects, and risks exist for estrogen therapy, whether vaginal or systemic (Minkin, 2013): <ul style="list-style-type: none"> ■ Contraindications: history of pulmonary embolism (PE), deep vein thrombosis (DVT), or other thromboembolic diseases; abnormal genital bleeding of unknown etiology; history of breast cancer; known or suspected estrogen-dependent cancer; and liver disease.

Genitourinary Syndrome of Menopause (GSM)

Description	Assessment	Interventions/Management
	<ul style="list-style-type: none"> ○ Identify if there is a history of a total abdominal or vaginal hysterectomy, radiation or chemotherapy treatments, and a history of vaginal births. More severe vaginal symptoms associated with GSM have been reported in women who have never given birth vaginally, compared to those who have had vaginal births (Pearson, 2011). ○ Review the medication history for the use of anticholinergics, diuretics, etc. ○ Identify if there is a history of tobacco use. ● Assess if the patient has itching, dryness, burning, irritation, recurrent UTIs or vaginitis. If the patient is sexually active, determine the frequency of sexual activity, if pain occurs during intercourse, and if vaginal lubricants are used. In a study of postmenopausal women, Huang et al. (2010) found: <ul style="list-style-type: none"> ○ Vaginal dryness was associated with younger age, nonwhite race, lower physical functioning, lower body mass index (BMI), recent sexual activity, and vaginal colonization with enterococci. ○ Vaginal itching was associated with lower physical functioning. ○ Painful intercourse was associated with younger age, diabetes, lower BMI, and a higher vaginal pH. ● Assess the number of times the patient voids in a 24 hour period, and during the day and night (Stewart, 2010): <ul style="list-style-type: none"> ○ Increased urinary frequency (i.e., passing urine more than 6 to 8 times in 24 hours). ○ Nocturia (i.e., getting up more than once a night to pass urine). ● Assess if the patient experiences discomfort riding a bike or from sitting long periods during automobile, train, or airline trips. ● Obtain or refer for a pelvic examination. 	<ul style="list-style-type: none"> ■ Common side effects of vaginal estrogen: vaginal bleeding and breast pain. ■ Risks: cerebral vascular accident (CVA), myocardial infarction, breast cancer, PE, DVT, and dementia. Unopposed estrogens in women with an intact uterus (i.e., without progesterone) carry warnings about the risk of endometrial cancer. ● Ospemifene is an oral agent that is a selective estrogen receptor modulator that is effective to treat moderate to severe dyspareunia due to GSM (Portman, Bachmann, Simon, & the Ospemifene Study Group, 2013; Shifren & Gass, 2014). ● Progestogen therapy is not recommended for endometrial protection with low-dose vaginal estrogen, although studies about endometrial safety have not extended beyond 1 year (Shifren & Gass, 2014). ● Probiotics may be beneficial to restore the microbiotic climate and promote urinary and vaginal health, and might help decrease infections (Borges, Silva, & Teixeira, 2014; Huang, Song, & Zhao, 2014). ● Perform perineal/vaginal care gently: <ul style="list-style-type: none"> ○ Use of a pediatric speculum may be necessary to visualize the vaginal vault. ○ Graduated vaginal dilators may be needed to gently stretch the vagina if the vaginal atrophy is severe. ○ To assist the healthcare provider and patient with healthcare decisions, NAMS has developed an algorithm (NAMS, 2014), and a free mobile application (NAMS, 2015) to facilitate making decisions about management of menopausal symptoms with hormonal/non-hormonal therapy. <p>Patient/caregiver education</p> <ul style="list-style-type: none"> ● Teach patients/caretakers:

Genitourinary Syndrome of Menopause (GSM)

Description	Assessment	Interventions/Management
	<p>Tests/diagnosis</p> <ul style="list-style-type: none"> • The diagnosis of GSM is based on the patient’s history of symptoms and findings from the physical examination (Minkin, 2013). • Vaginal pH can be measured using litmus paper; pH greater than 5.0 indicates GSM (Lynch, 2009; Portman & Gass, 2014). • Microscopy can be used to rule out trichomoniasis, candidiasis, and bacterial vaginosis (Lynch, 2009). • Serum hormone levels can be obtained to assess for low levels of circulating estrogen (Lynch, 2009). • Differential diagnosis should include ruling out other conditions (Minkin, 2013): <ul style="list-style-type: none"> ○ Vaginal infection: candida vulvovaginitis, bacterial vaginosis, and trichomoniasis. ○ Vulvovaginal dermatoses: lichen sclerosis, lichen planus, and lichen simplex. ○ Contact dermatitis. ○ Cancerous or precancerous lesions. 	<ul style="list-style-type: none"> ○ Avoid: tightly fitted jeans, bath salts, highly chlorinated pools, feminine sprays, and other irritants. ○ Symptoms of GSM, and advise patients to discuss the symptoms with a healthcare provider. <ul style="list-style-type: none"> ▪ Many women are not aware of the syndrome of GSM, and that symptoms may be relieved with medical treatment. Women may view incontinence as a normal part of aging that does not require treatment, lack knowledge about treatment options, or may be embarrassed to seek care (Strickland, 2014). Consequently, most women do not mention their symptoms to healthcare providers, fostering a “culture of silence” (Minkin, 2013). ▪ Approximately 50% of postmenopausal women experience symptomatic GSM, but less than 25% receive care due to a lack of communications between the patient and provider (Pearson, 2011). <p>Indications for referral</p> <ul style="list-style-type: none"> • Referral to a gynecologist, urologist, or urogynecologist is appropriate if the patient is unresponsive to the treatment regimen, the vulva or vagina appears atypical, or there are contraindications for estrogen use (Minkin, 2013). • If the patient has a severely atrophic vagina and dilators are the patient’s treatment of choice, a referral to a provider who specializes in women’s health might be appropriate (e.g., continence nurse practitioner, physical therapist). • It is important for healthcare providers to listen carefully to patients when they discuss their needs and preferences for treatments.

Urinary Tract Infection (UTI)

Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> ● UTIs are most commonly caused by bacteria, but they can also be caused by other microbes such as fungi and viruses (NKUDIC, 2012): <ul style="list-style-type: none"> ○ Normally, bacteria that enter the urinary tract are rapidly removed by the body before causing symptoms. ○ However, sometimes bacteria overcome the body's natural defenses and cause infection in the urethra (urethritis) or bladder (cystitis), and/or the bacteria may travel up the ureters to multiply and infect the kidneys, which is known as pyelonephritis. ● UTIs affect about 40% of women at some point in their life (Sheerin, 2011). ● UTIs can cause significant distress to the individual and life-threatening sepsis (most infections are less severe); are associated with high healthcare and social costs; and in the United States, are reported to result in 7 million clinic visits per year with a cost exceeding \$1.6 billion (Sheerin, 2011). ● UTIs can be categorized as uncomplicated or complicated (Brusch, 2013; Sheerin, 2011): <ul style="list-style-type: none"> ○ Uncomplicated UTIs are the most common and occur without the presence of anatomical or functional abnormalities. ○ Complicated UTIs occur when there are metabolic, functional, or structural abnormalities, which may involve both the lower and upper urinary tracts; and/or treatment failures. <p>Risks/etiology</p> <ul style="list-style-type: none"> ● Most UTIs are caused by bacteria that live in the bowel. 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> ● Indicators of UTI include (Drinka, 2009; Giesen, Cousins, Dimitrov, van de Laar, & Fahey, 2010; NKUDIC, 2012): <ul style="list-style-type: none"> ○ Change in color or odor of urine. ○ Dysuria (i.e., painful voiding). ○ Frequency (i.e., frequent voiding). ○ Urgency (i.e., the urge to void immediately). ○ Gross hematuria: a highly predictive symptom of a UTI. ○ Chills; significant fever (i.e., 100 °F or an increase of more than 2.4 °F over baseline). ○ Delirium or worsening of mental or functional status. ○ Flank tenderness; suprapubic pain/tenderness. <p>Assessment parameters</p> <ul style="list-style-type: none"> ● History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. ● Examine a sample of urine for color, odor, or other changes; or obtain a report from the patient/caretaker about the characteristics and any changes in the urine. <p>Tests/diagnosis</p> <ul style="list-style-type: none"> ● Urinalysis by dipstick: A positive test for nitrites and leukocytes indicates a UTI, particularly in the presence of hematuria (Giesen et al., 2010; NKUDIC, 2012). ● Urine culture/urine microscopic analysis: <ul style="list-style-type: none"> ○ A urine culture obtained from a voided midstream urine specimen can accurately provide evidence of bladder <i>E. coli</i> in patients with acute uncomplicated cystitis (Hooton, Roberts, Cox, & Stapleton, 2013). 	<p>Treatment/management options</p> <ul style="list-style-type: none"> ● Antibiotic therapy: <ul style="list-style-type: none"> ○ For many years, trimethoprim-sulfamethoxazole (TMP-SMX) was the preferred antibiotic for the treatment of UTIs, given its efficacy and low cost. However, the development of a high prevalence of resistance to TMP-SMX among uropathogens has resulted in decreased use of this drug. An effective alternative has been fluoroquinolone antibiotics, which achieve high concentrations in the urine and have excellent activity against most uropathogens (McKinnell, Stollenwerk, Jung, & Miller, 2011). ○ Based on a meta-analysis of 10 RCTs, ciprofloxacin and gatifloxacin were reported to be the most effective treatments for uncomplicated UTIs (Knottnerus et al., 2012). ○ When considering the efficacy, cost, and low antimicrobial resistance, nitrofurantoin is a reasonable alternative to TMP-SMX and the fluoroquinolones for first-time therapy for uncomplicated UTIs (McKinnell et al., 2011). ○ Selection of the antibiotic should be based on culture/sensitivity testing (Drinka, 2009; NKUDIC, 2012). ○ For patients with asymptomatic bacteriuria, antibiotics are not beneficial and can be detrimental due to the promotion of resistant organisms or the overgrowth of other dangerous pathogens (Drinka, 2009). <p>Patient/caregiver education</p> <ul style="list-style-type: none"> ● Teach patients/caregivers: <ul style="list-style-type: none"> ○ Wash hands before and after using the toilet. ○ Perineal care and hygiene: <ul style="list-style-type: none"> ■ Wash the perineal area at least once a day. ■ For women, wipe front to back after urination and defecation.

Urinary Tract Infection (UTI)

Description	Assessment	Interventions/Management
<ul style="list-style-type: none"> ○ The bacterium <i>Escherichia coli</i> (<i>E. coli</i>) causes the majority of UTIs (NKUDIC, 2012), and in one study was found to cause 82.3% of UTIs in nonpregnant, nonlactating adult females (Filiatrault et al., 2012). ○ Bacterial colonization of the urinary tract is not always symptomatic, and asymptomatic bacteriuria is a common finding in women and the elderly (Sheerin, 2011). ● Other pathogens that cause UTIs include: <ul style="list-style-type: none"> ○ Enterococci, <i>Pseudomonas aeruginosa</i>, candida species, and <i>Klebsiella pneumoniae</i> (Brusch, 2013). ○ <i>Chlamydia</i> and <i>Mycoplasma</i> can infect the urethra and reproductive system, but not the bladder; may be sexually transmitted; and infection requires treatment of sexual partners (NKUDIC, 2012). ● Common risk factors for UTIs include: <ul style="list-style-type: none"> ○ Female gender: Women are more prone to UTIs than men. The female urethra is shorter than males allowing bacteria to reach the bladder quickly (Brusch, 2013; NKUDIC, 2012; Sheerin, 2011). ○ Non-secretor status: Women who are nonsecretores are more prone to recurrent UTIs (NKUDIC, 2012; Sheerin, 2011). A nonsecretores is an individual with blood type A, B, or AB who does not secrete the normal antigens for that blood type in body fluids (i.e., fluid in bladder wall), which allows bacteria to attach more easily (NKUDIC, 2012). ○ Common factors associated with <i>complicated</i> UTIs include (Sheerin, 2011): <ul style="list-style-type: none"> ■ Urethral stricture, ureteral reflux, bladder neck obstruction, urinary tract stones, prostate disease, renal or urinary tract malignancy, or instrumentation of the renal tract (e.g., catheterization or stent). 	<ul style="list-style-type: none"> ○ In a study of hospitalized patients, those with 100,000 colony-forming units per milliliter (CFU/ml) or more in their urine culture were 73.86 times more likely to have a clinically significant UTI ($p < .0001$) than those with less than 100,000 CFU/ml (Kwon, Fausone, Du, Robicsek, & Peterson, 2012). ● A leukocyte esterase test is a marker for pyuria rather than bacteria. However, a negative leukocyte esterase screening test has high specificity and may be useful in excluding a UTI (WOCN, 2007). ● Voiding cystography and renal dimercaptosuccinic acid scintigraphy are common methods used to diagnose renal involvement, but the tests are costly and radioactive to children (Xu, Liu, Liu, & Dong, 2014). Therefore, those tests are not routinely recommended for diagnosis of UTIs in pediatric patients (La Scola, 2014; Xu et al., 2014). ● Post-void, computerized tomography (CT) scan without contrast (i.e., renal protocol) can be used to detect stones (WOCN, 2007). ● Serum levels of procalcitonin (PCT) and C-reactive protein can serve as early indicators of serious bacterial infections and septicemia (Xu et al., 2014): <ul style="list-style-type: none"> ○ PCT is also correlated with the severity of bacterial infections and is a predictor of renal parenchymal involvement in acute and late renal scars. ○ PCT is an easy and inexpensive method for differentiating between acute pyelonephritis and infection in the lower urinary tract. ● Bacteria can be found in the urine of healthy, asymptomatic individuals; therefore UTI is diagnosed on the basis of both symptoms and laboratory tests (NKUDIC, 2012). 	<ul style="list-style-type: none"> ■ Void and wash the perineal area before and after sexual activity. ■ Avoid use of possible irritants such as perfumed toilet paper, soaps, powders, feminine sprays, vaginal cleansers, and bubble baths. ○ Wear comfortably fitting, cotton-lined underwear. ○ Maintain adequate hydration: Depending on individual assessment, drink 6 to 8 glasses of liquid, or an amount sufficient to produce pale yellow urine or 30 ml urine/kg of body weight per 24 hours (WOCN, 2007). ○ Empty the bladder on average of every 3 to 4 hours when awake (WOCN, 2007). ○ Urinate when the urge arises and after sexual intercourse; women should consider changing forms of birth control if UTIs are recurrent (NKUDIC, 2012). ○ Consider lubricated condoms without spermicide to help prevent UTIs in women. ○ Avoid constipation. ○ Use comfort measures for pain associated with dysuria such as medications or a heating pad to the abdomen or back (NKUDIC, 2012). <p>Indications for referral</p> <ul style="list-style-type: none"> ● Refer to a urologist or other healthcare professional(s) for the treatment of any underlying conditions or diseases, or a lack of response to the treatment regimen.

Urinary Tract Infection (UTI)		
Description	Assessment	Interventions/Management
<ul style="list-style-type: none"> ▪ Neuropathic bladder: multiple sclerosis, spina bifida, spinal cord trauma, and diabetes mellitus/glycosuria. ▪ Pregnancy, immunosuppression, ileal conduit, and kidney transplant. ○ Other risks include (NKUDIC, 2012; Sheerin, 2011): <ul style="list-style-type: none"> ▪ Incomplete bladder emptying. ▪ Recent or recurrent UTIs; family history of UTIs. ▪ Sexual intercourse; condom use; diaphragm and spermicidal contraception; and pregnancy. ▪ Recent antibiotic use; disruption of normal bacterial flora. ▪ Postmenopausal alteration in vaginal flora. ▪ Indwelling urethral or suprapubic catheter. 		

Stool Impaction or Constipation		
Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> • Stool constipation or impaction can exert pressure through the perineum effectively creating an outflow obstruction and urinary retention (Cunha, 2014; Ermer-Seltun, 2006; NKUDIC, 2014). • A large fecal mass can increase pressure on the bladder and stimulate bladder contractions, which can result in urinary urgency and frequency, and urge incontinence (Ermer-Seltun, 2006; Shenot, 2014). • In a 9-year, longitudinal study of women (70 to 75 years of age), constipation was found to have a strong association with urinary incontinence (Byles, Millar, Sibbritt, & Chiarelli, 2009). 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> • Indications of constipation (i.e., 2 or more symptoms occurring in more than 25% of defecations) include: straining to empty bowels, lumpy or hard stools, incomplete evacuation, sensations of obstruction/blockage, manual emptying, and/or less than three defecations per week (Song, 2012). • Changes in bowel and/or urine habits, urinary incontinence, and/or abdominal pain and bloating might indicate a bowel obstruction (Chien & Bradway, 2010). <p>Assessment parameters</p> <ul style="list-style-type: none"> • History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. 	<p>Treatment/management options</p> <ul style="list-style-type: none"> • Remove the fecal impaction, and/or use enemas to cleanse the colon as needed. • Consider laxatives or stimulants if normal defecation does not resume in 3 days, but the use of these agents should not be so aggressive that it produces liquid stools leading to fecal incontinence (Chien & Bradway, 2010). • Establish a regular bowel routine (WOCN, 2007): <ul style="list-style-type: none"> ○ A bowel regimen may include adding stool softeners and fiber products. ○ Based on individual assessment, increase fiber intake to greater than 20 g per day by using whole grain bread, cereal, fruits, and vegetables; and maintain adequate hydration.

Stool Impaction or Constipation

Description	Assessment	Interventions/Management
<p>● In a study of community-dwelling individuals (mean age 76 years), Song (2012) found that patients who had constipation had a greater incidence of UI and lower urinary tract symptoms (e.g., hesitancy, weak stream, incomplete emptying, frequency, urgency), compared to patients who were not constipated.</p> <p>Risks/etiology</p> <ul style="list-style-type: none"> ● Sedentary lifestyle. ● Inadequate dietary intake of fluids; dehydration. ● Adverse effects of medications: anticholinergics, antispasmodics, calcium channel blockers, and opioids. ● Rectal/anal structural abnormalities: prolapse, hemorrhoids, masses, lesions, etc. (Chien & Bradway, 2010). 	<ul style="list-style-type: none"> ○ The onset of UI may correspond to the onset of constipation. ○ Comprehensively review the patient's medications including any prescription and over-the-counter (OTC) medications, and/or herbal/natural agents (Ermer-Seltun, 2006). ○ Taking a fiber supplement without adequate fluid intake can cause constipation/impaction (Chien & Bradway, 2010). ○ Review the past medical history, including a history of any gynecological or gastrointestinal conditions, and surgeries (Ermer-Seltun, 2006). ○ Obtain a 3-day bladder diary that includes a record of liquid and dietary intake, and voided amounts (Dowling-Castronovo, 2013). ○ Inquire about the patient's activity level. <ul style="list-style-type: none"> ● Perform or refer for a physical examination with a particular focus on the abdominal, neurological, gynecological, and anorectal assessments including a rectal exam to identify the consistency of the feces or presence of an impaction (Ermer-Seltun, 2006). <p>Tests/diagnosis</p> <ul style="list-style-type: none"> ● Stool for occult blood. ● Abdominal radiograph. ● Consider evaluating for a bowel evacuation disorder, which can include anorectal manometry, defecography, or a transit study (WOCN, 2007). 	<ul style="list-style-type: none"> ● Depending on individual assessment, maintain adequate hydration by drinking 6 to 8 glasses of liquid, or an amount sufficient to produce pale yellow urine or 30 ml urine/kg of body weight per 24 hours. <p>Patient/caregiver education</p> <ul style="list-style-type: none"> ● Teach measures to establish a regular bowel routine (WOCN, 2007): <ul style="list-style-type: none"> ○ Choose a regular time to defecate (e.g., after breakfast). ○ Respond to the urge to defecate. ○ Place feet on the floor or on a footstool when sitting on the toilet. ○ Maintain privacy during toileting. ○ Use habits that “work” (e.g., drinking a warm beverage). ● Establish a regular exercise pattern such as walking (WOCN, 2007). ● If fiber supplements are used, dilute properly, and drink adequate fluid to prevent choking or intestinal blockage (Bliss & Norton, 2010). ● Prevent constipation/impaction by emptying the rectum regularly with enemas, suppositories, or laxatives for patients with persistent problems (Bliss & Norton, 2010). <p>Indications for referral</p> <ul style="list-style-type: none"> ● Patients with rectal bleeding or a positive hemoccult test with bowel changes or an unexplained weight loss should be referred for diagnostic evaluation by a gastroenterologist or colorectal surgeon (Bliss & Norton, 2010). ● Referral for surgical repair is warranted for a rectal prolapse, hemorrhoids, or anal sphincter injury (Bliss & Norton, 2010); and/or symptoms of a bowel obstruction (Chien & Bradway, 2010).

Stool Impaction or Constipation		
Description	Assessment	Interventions/Management
		<ul style="list-style-type: none"> If conservative management is ineffective, refer for further testing and/or evaluation for other therapies (Bliss & Norton, 2010).

Restricted Mobility and/or Dexterity		
Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> Restricted mobility and/or dexterity may cause patients to experience functional UI (ICS, 2013). Functional UI happens when a patient, who is normally continent, has trouble reaching a toilet facility in time (ICS, 2013). The patient may suffer from a medical problem that interferes with thinking, moving, or communicating his or her desire to use the toilet facilities (Continence Foundation of Australia, 2014). <p>Risks/etiology</p> <ul style="list-style-type: none"> Cognitive impairment: dementia, delirium, CVA, transient ischemic attacks, and Huntington's disease (Thompson, 2006). Physical limitations: <ul style="list-style-type: none"> Poor eyesight. Poor mobility/coordination and decreased physical function such as hemiplegia from a CVA, obesity, cardiovascular disease, rheumatoid arthritis/osteoarthritis, Parkinson's disease, multiple sclerosis, musculoskeletal trauma, weakness, and deconditioning (Palmer, 2016; Thompson, 2006). Poor dexterity (e.g., lack of fine motor skills making removing clothing difficult such as from arthritis). Pain: acute or chronic. Falls, fractures, paralysis, paresis, or neuropathy. Environmental factors: 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> Patient soils clothing prior to reaching the toilet facility; smells of urine. Skin damage related to episodes of incontinence. <p>Assessment parameters</p> <ul style="list-style-type: none"> History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. <ul style="list-style-type: none"> The past and current medical history is the key to assess functional UI and identify the multiple risks/causative factors and barriers to safe and independent toileting. Assess the patient's ability to reach the toilet by observing them remove their clothing and position themselves for toileting. Assess the patient's pain level and medications he/she is taking, which could interfere with movement (i.e., prescribed, OTC, and other herbal/natural agents). Assess any incontinence containment products for proper fit and ease of application and removal. <p>Tests/diagnosis</p> <ul style="list-style-type: none"> A validated test of mobility is the Timed Up and Go Test, which can be used to assess the patient's ability to stand up from a chair and walk, using a walking aid if needed (Centers for Disease Control and Prevention [CDC], 2014). 	<p>Treatment/management options</p> <ul style="list-style-type: none"> Scheduled toileting (e.g., timed voiding, empty bladder on a schedule of every 2 to 3 hours). Remove physical/environmental barriers when applicable (e.g., rugs, furniture). <ul style="list-style-type: none"> Install a raised toilet seat, hand rails, or grab bars. Maintain a clear, well-lighted pathway to the bathroom. Place a commode or urinal at the bedside if needed. Modify clothing and incontinent products: <ul style="list-style-type: none"> Encourage the patient to wear easy-to-remove clothing (e.g., skirts instead of slacks; suspenders instead of belts; elastic-waist pants; clothing with Velcro closures instead of buttons or zippers). Use pull-up style incontinent products or other easy-to-remove pads. Encourage daily exercise to improve strength and balance. <p>Patient/caregiver education</p> <ul style="list-style-type: none"> Instruct in the use of any assistive devices or modifications in equipment to enable safe and timely toileting. <p>Indications for referral</p> <ul style="list-style-type: none"> Referral may be needed to treat underlying causes of functional incontinence.

Restricted Mobility and/or Dexterity		
Description	Assessment	Interventions/Management
<ul style="list-style-type: none"> ○ Poor lighting, low chairs that are difficult to get out of, and toilets that are difficult to access (Mathis, Ehlman, Dugger, Harrawood, & Kraft, 2013). ○ Equipment such as walkers and wheelchairs that are too big to go through bathroom doors (WOCN, 2007). ● Motivational issues due to depression, anxiety, anger, bipolar disease, schizophrenia, or psychosis (Continence Foundation of Australia, 2014; Thompson, 2006). ● Medications: sedatives, analgesics, and narcotics. 		<ul style="list-style-type: none"> ● Consider referrals to physical and/or occupational therapists to provide a safety assessment and assist the patient/caregiver with mobilization strategies.

Irritants		
Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> ● Irritants from varied external and external factors can promote lower urinary tract symptoms. <p>Risks/etiology</p> <ul style="list-style-type: none"> ● The Interstitial Cystitis Association lists multiple foods, beverages, and ingredients in food or beverages that may cause bladder irritation (Beyer, Gordon, Laumann, Osborne, & Shorter, 2009): <ul style="list-style-type: none"> ○ Aged cheeses, artificial sweeteners (e.g., aspartame, neotame, saccharin, sucralose). ○ Carbonated drinks, alcohol, caffeine products (including decaffeinated coffee and teas), and chocolate. ○ Most fruits except blueberries, honeydew melon, and pears: oranges, pineapple, tomatoes, cranberries, and foods or vitamins that contain high levels of vitamin C. ○ Fava and lima beans; meats that are cured, processed, smoked, canned, aged, or contain nitrites. ○ Nicotine. 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> ● Urinary frequency and urgency; dysuria. ● Discomfort, burning in the pelvic area. ● Dyspareunia (painful intercourse). ● Visible irritation of the perineum and vaginal area. ● Mild to moderate dehydration: decreased urinary output, dark-colored urine, increased thirst, dry mouth, fatigue/sleepiness, headache, dry skin, and dizziness. ● <i>Note:</i> Decreased oral intake to prevent leakage causes urine to become more concentrated, which is irritating to the bladder resulting in the urge to pass urine more frequently (Stewart, 2010). <p>Assessment parameters</p> <ul style="list-style-type: none"> ● History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. <ul style="list-style-type: none"> ○ Obtain a food and liquid diary. ○ Obtain a bladder diary to delineate 	<p>Treatment/management options</p> <ul style="list-style-type: none"> ● The patient should exclude all known and suspected irritants from her/his diet and gradually add one item at a time back into the diet. ● If the patient has GSM, treat with non-hormonal, vaginal lubricants or a low-dose, vaginal estrogen, which has minimal systemic absorption (Shifren & Gass, 2014). ● NAMS reports that low-dose vaginal estrogen therapy (e.g., cream, tablet, ring form) is effective for persistent symptoms of GSM (Shifren & Gass, 2014). <ul style="list-style-type: none"> ○ Vaginal estrogen has been reported to reduce urinary frequency and urgency, and recurrent UTIs in postmenopausal women (Shifren & Gass, 2014; Shifren & Schiff, 2010). ○ Example—estradiol vaginal cream: Usual dosage is 2 to 4 g daily for 1 to 2 weeks; reduced to half of the initial dose for 1 to 2 weeks; and followed with a maintenance dose of 1 g, 1 to 3 times a week (RxList, 2015). ○ Schedule an early follow-up visit to monitor the effects of the therapy.

	frequency, quantity of intake, and output:	
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Irritants		
Description	Assessment	Interventions/Management
<ul style="list-style-type: none"> ○ Nuts, except almonds, cashews, and pine nuts. ○ Seasonings that contain monosodium glutamate; spicy foods. ○ Sour cream, sourdough bread, rye bread, soy, tofu, and yogurt, etc. ● Other of sources of irritants may include: <ul style="list-style-type: none"> ○ Perfumed bath salts, soap or menstrual products in the vaginal area, hygienic wipes or douches, and pool water that is highly chlorinated. ○ Noncotton underwear. ○ Condoms or spermicides. ○ OTC topical antifungal preparations. ● Medical problems have also been associated with symptoms of bladder irritation including: <ul style="list-style-type: none"> ○ GSM (Portman & Gass, 2014). See the Section about GSM for additional information. ○ Recurrent UTIs. ○ Glycosuria/diabetes mellitus, weight gain, pregnancy, constipation, and certain cancers can result in overactive bladders and incontinence (Brown, 2014). 	<p>Have the patient/caretaker measure all intake and urine output for 3 days.</p> <ul style="list-style-type: none"> ○ Some organizations/websites have free mobile applications (app) for tracking fluid and dietary intake and output: <ul style="list-style-type: none"> ■ Myfitnesspal: app to record food/fluid intake (www.myfitnesspal.com/). ■ Interstitial Cystitis Association: voiding diary for tracking intake/output (www.ichelp.org/page.aspx?pid=1144). <p>Tests/diagnosis</p> <ul style="list-style-type: none"> ● Urinalysis: <ul style="list-style-type: none"> ○ Specific gravity: The normal range is 4.6 to 8.0, and it is elevated in dehydration (WebMD, 2012). ○ Urine pH: The normal range is 4.6 to 8.0; a pH of 4.0 is strongly acidic; and a pH of 9.0 is strongly alkaline (WebMD, 2012). ○ Test for glucose if diabetes mellitus is suspected. ○ Test for nitrites, leukocyte esterase, and obtain a culture/sensitivity if an infection is suspected. ● Vaginal pH: The normal range is 3.8 to 4.5 (WebMD, 2014). ● A potassium sensitivity test is NOT recommended if interstitial cystitis is suspected; the test is painful and can trigger a flare of severe symptoms (Hanno et al., 2014). ● Diagnosing the patient's problem is a matter of exclusion. Start with enough time to listen carefully and correlate the clinical findings with the patient's reported symptoms. 	<p>Patient/caregiver education</p> <ul style="list-style-type: none"> ● Provide handouts or written guides about sources of irritants and dietary restrictions. ● Provide information about resources/groups that provide support, education, and informational tools: <ul style="list-style-type: none"> ○ Interstitial Cystitis Association: www.ichelp.org; Phone: 703-442-2070. ○ National Association for Continence: www.NAFC.org; Phone: 1-800-BLADDER. <p>Indications for referral</p> <ul style="list-style-type: none"> ● Diabetes mellitus: Refer to a nutrition counseling/teaching program (if available) to help with blood sugar management. ● Tobacco smoking: Refer to a smoking cessation program. ● Interstitial cystitis: Consider referrals to other healthcare providers: <ul style="list-style-type: none"> ○ A provider (e.g., continence nurse practitioner; physical therapist) who specializes in women's health, myofascial release therapy, and biofeedback to help relax the pelvic floor (Hanno et al., 2014). ○ A provider (e.g., continence/urology nurse practitioner) who offers percutaneous tibial nerve stimulation (PTNS). A recent systematic review found that PTNS may increase bladder capacity and decrease pain in patients with painful bladder syndrome/interstitial cystitis (Gaziev et al., 2013).

Pharmaceuticals

Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> Many medications can increase the risk of UI. It is important to recognize medication use as a potential etiology when assessing acute/transient UI. <p>Risks/etiology</p> <ul style="list-style-type: none"> Medications/drugs (e.g., new medications, changes in dosage or frequency, or polypharmacy). <ul style="list-style-type: none"> Diuretics often cause polyuria, frequency, and urgency (Casey, 2011; Shenot, 2014). Cholinergics/muscarinic receptor agonists (e.g., pilocarpine, bethanechol chloride) stimulate receptors and increase tone and contraction of the detrusor muscle (Casey, 2011). Anticholinergic/antimuscarinic agents (e.g., tricyclic antidepressants, oxybutynin, atropine) decrease contraction of the detrusor and may cause urinary retention, resulting in overflow incontinence (Casey, 2011; Shenot, 2014). Alpha-1 adrenergic receptor antagonists (e.g., prazosin, doxazosin, terazosin) relax the internal urethral sphincter, which can result in stress incontinence (Casey, 2011; Shenot, 2014). Beta-adrenergic antagonists (e.g., propranolol), alpha-adrenergic agonists (e.g., ephedrine, amphetamines), and calcium channel blockers (e.g., diltiazem, nifedipine) can cause urinary retention resulting in overflow incontinence (Casey, 2011; Shenot, 2014). Ace inhibitors (e.g., enalapril maleate, quinapril hydrochloride) can cause a dry cough and may contribute to stress incontinence in women (Ermer-Seltun, 2006). 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> Polyuria, frequency, urgency, incontinence, or retention may develop, depending on the medication. <p>Assessment parameters</p> <ul style="list-style-type: none"> History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. <ul style="list-style-type: none"> Comprehensively review the patient's medications including prescription and OTC medications or herbal/natural agents, and determine if there were any recent changes in the medication regimen (Ermer-Seltun, 2006). Obtain a thorough past medical history, including gynecological, gastrointestinal, and surgical history (Ermer-Seltun, 2006). Obtain a 3-day bladder diary including liquid intake (Dowling-Castronovo, 2013). Perform or refer for a physical examination with a particular focus on the abdominal, neurological, gynecological, and anorectal assessments (Ermer-Seltun, 2006; Shenot, 2014). <p>Tests/diagnosis</p> <ul style="list-style-type: none"> The initial assessment should include a specimen for urinalysis and culture. Urinalysis by dipstick can be used to test for blood, nitrites, white cells, and glucose (International Continence Society [ICS], 2013). Obtain other tests, if indicated, such as an ultrasound to determine the postvoid residual volume (Shenot, 2014). 	<p>Treatment/management options</p> <ul style="list-style-type: none"> Treatment includes identification of the offending medication(s), and modification of the medication regime, if possible. If current medications must be continued, consider other appropriate strategies to manage the UI such as behavioral techniques or containment products. <p>Patient/caregiver education</p> <ul style="list-style-type: none"> Instruct the patient/caregiver to: <ul style="list-style-type: none"> Report any changes in voiding correlated with initiation of a new medication, or changes in dosage or frequency. Consult with a healthcare provider before taking any nonprescription cold remedies. Maintain a list of current medications and review the list with all healthcare providers. Teach the patient/caregiver the effects and/or side effects of the following on bladder activity: <ul style="list-style-type: none"> Current medications: prescribed and OTC medications, and natural/herbal products. Caffeine, including dietary sources of caffeine. Alcohol. <p>Indications for referral</p> <ul style="list-style-type: none"> Referral to a urologist is warranted for pain, hematuria, recurrent infection, pelvic mass, history of pelvic irradiation, or a history of a previous pelvic surgery.

Pharmaceuticals

Description	Assessment	Interventions/Management
<ul style="list-style-type: none"> ○ Opioid analgesics can increase bladder compliance and can increase the risk of UI by affecting the functional ability of the bladder (Casey, 2011). ○ Skeletal muscle relaxants, such as benzodiazepine can decrease the tone of the external sphincter (Casey, 2011). ○ Antipsychotics, sedatives, antidepressants, tranquilizers, hypnotics, and narcotics may decrease the ability to recognize and respond appropriately to bladder filling (Casey, 2011; Shenot, 2014). ○ Estrogen therapy: <ul style="list-style-type: none"> ■ Based on a study of community-dwelling women (≥ 65 years of age), current estrogen use (i.e., oral and transdermal estrogen with or without progestin) increased the risk of UI by 60% (Ruby et al., 2010). ■ As discussed in the Section about GSM, systematic reviews have shown that vaginal estrogens improved incontinence in postmenopausal women (Cody et al., 2012; Rahn et al., 2014); whereas, oral therapy using conjugated equine estrogen with/or without progestogens worsened UI (Cody et al., 2012). ● Other agents that contribute to UI: <ul style="list-style-type: none"> ○ Caffeine is thought to increase the activity of the detrusor, inhibit the internal sphincter, and increase urine production, frequency, polyuria, urgency, and nocturia (Casey, 2011; Shenot, 2014). ○ Alcohol has a diuretic effect, and can cause sedation, delirium, and impaired mobility, which may result in UI (Shenot, 2014). 		

Polyuria

Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> • Polyuria is the production of abnormally large volumes of urine, which is greater than 3 L per day in adults (Jakes & Bhandari, 2013). • Nocturnal polyuria is a condition where the usual day to night ratio of urine production is altered with an excessive volume of urine at night, but the total daily urine output remains normal (Kujubu, 2009). <p>Risks/etiology</p> <ul style="list-style-type: none"> • Causes of polyuria (Jakes & Bhandari, 2013): <ul style="list-style-type: none"> ◦ Most common causes: 1 in 10 cases are due to diuretics, caffeine, alcohol, diabetes mellitus, use of lithium, and heart failure. ◦ Infrequent causes: 1 in 100 cases are due to hyperkalemia and hyperthyroidism. ◦ Rare causes: 1 in 1,000 cases are due to renal failure, primary polydipsia, and hypokalemia. ◦ Very rare causes: 1 in 10,000 cases are due to diabetes insipidus. • Causes of nocturnal polyuria: <ul style="list-style-type: none"> ◦ Bladder dysfunction; obstructive sleep apnea (Kujubu, 2009). ◦ Nocturnal polyuria, which is most common in the elderly, can be due to a disturbance in the production of vasopressin, excess production of atrial natriuretic peptide, nighttime evacuation of daytime third space fluid sequestration, medications such as diuretics, or excessive fluid intake at nighttime (Madersbacher & Cornu, 2012). 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> • Urinary frequency, a large volume of urine output, dehydration, weight loss, and muscle weakness (Jakes & Bhandari, 2013). • Kujubu (2009) reports that patients with nocturnal polyuria pass more than 33% of their total urine output at night, while the daily total urine output remains normal. <p>Assessment parameters</p> <ul style="list-style-type: none"> • History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. <ul style="list-style-type: none"> ◦ Assess the timing of urination: nocturnal, throughout the day, or both. ◦ Obtain a complete drug history to rule out pharmacological causes (Jakes & Bhandari, 2013). • Perform or refer for a physical examination, which should include complete abdominal and genitourinary exams, and orthostatic vital signs (Kujubu, 2009). <p>Tests/diagnosis</p> <ul style="list-style-type: none"> • Urinalysis by dipstick: Check for positive glucose or a low specific gravity (< 1.005; WOCN, 2007). • Check urine and plasma osmolality, urine electrolytes, serum urea and electrolytes, calcium, capillary blood glucose, random/fasting glucose or glycosylated hemoglobin (hemoglobin A1c); and obtain a fluid balance chart (Jakes & Bhandari, 2013). • Other studies to consider include: postvoid residual volume, urine culture, urine flow studies, voiding diary, urodynamic evaluation, and a polysomnogram if sleep apnea is suspected (Kujubu, 2009). 	<p>Treatment/management options</p> <ul style="list-style-type: none"> • Control or correct the underlying disorder. • Use a consistent, well-defined/structured skin care regimen (i.e., gentle skin cleansing, moisturization, and application of a skin protectant) for prevention and treatment of incontinence-associated dermatitis (Bryant, 2012). • Therapeutic options for nocturia include (Kujubu, 2012): <ul style="list-style-type: none"> ◦ Restriction of fluid intake 6 hours before bedtime. ◦ Reduction of caffeine and alcohol intake. ◦ Phototherapy to reset the circadian rhythm. ◦ Biofeedback; bladder/pelvic floor exercises. ◦ Continuous positive airway pressure to treat obstructive sleep apnea. ◦ Medications (e.g., alpha adrenergic blockers, estrogen creams, anticholinergic agents). ◦ Electrical modulation of the sacral nerves with transcutaneous or implantable electrodes if other treatments fail. <p>Patient/caregiver education</p> <ul style="list-style-type: none"> • Avoid excessive fluid intake (WOCN, 2007). • Limit or avoid caffeine (e.g., coffee, tea, colas) and alcohol (WOCN, 2007). • Record intake and output (Jakes & Bhandari, 2013). <p>Indications for referral</p> <ul style="list-style-type: none"> • Tests are inconclusive and further diagnostic tests are needed to determine the underlying etiology. • Treatment is needed for underlying conditions or diseases. • There is a lack of response to the treatment regimen.

Urinary Retention (UR)

Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> ● UR is also known as uroschisis (“Uroschisis,” n.d.). ● UR is the inability to empty the bladder completely, and it can be acute or chronic (NKUDIC, 2014): <ul style="list-style-type: none"> ○ Acute UR occurs suddenly; patients are unable to urinate even though they have a full bladder; and it can cause great discomfort or pain. Acute UR is potentially a life-threatening medical condition, which requires immediate emergency treatment. ○ Chronic UR can last a long time: Patients can pass some urine, but are unable to completely empty the bladder, which can lead to incontinence and UTIs. ● UR occurs in 5% to 13% of post-operative patients, and the incidence increases with epidural anesthesia and pelvic, hip, or abdominal surgery (Casey, 2011). <p>Risks/etiology</p> <ul style="list-style-type: none"> ● UR may be caused by conditions that affect the bladder contractility or obstruct the bladder outlet (NKUDIC, 2014). ● Multiple causative factors include, but are not limited to the following conditions (NKUDIC, 2014): <ul style="list-style-type: none"> ○ Benign prostatic hyperplasia (BPH): UR is more common in men 50 to 60 years of age due to BPH, which is a noncancerous enlargement of the prostate. The incidence of BPH increases with age. ○ UTI, urethritis, prostatitis, urethral stricture from recurrent UTIs, scarring after an injury to the penis or perineum, and urinary tract stones. ○ Inflammation. ○ Neurological conditions: neurogenic bladder 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> ● Acute UR: inability to urinate; painful urge to urinate; discomfort, pain, and/or distention of the lower abdomen; and requires immediate medical attention (NKUDIC, 2014). ● Chronic UR: urinary frequency, difficulty starting the urine stream, weak or interrupted stream, urgency to void with/or without leakage of urine, sensation of incomplete emptying after urinating, and mild, constant discomfort in the lower abdomen/urinary tract (NKUDIC, 2014). Dribbling/leakage of urine may occur without the urge to void, which is also referred to as overflow incontinence (NKUDIC, 2013; Shenot, 2014; WOCN, 2007). ● UR can trigger autonomic dysreflexia (AD) in patients with T6 and above spinal cord injuries (SCI): AD is a syndrome characterized by the acute elevation of arterial blood pressure (BP) and bradycardia; although, tachycardia can also occur (Krassioukov, Warburton, Teasell, Eng, & SCIRE Reseach Team, 2009): <ul style="list-style-type: none"> ○ AD is caused by a massive sympathetic discharge that is triggered by a stimulus below the level of the SCI. ○ An increase in systolic BP greater than 20 to 30 mmHg is considered an AD episode. However, the usual resting BP in patients with cervical and high thoracic SCI is usually 15 to 20 mmHg lower than able-bodied persons, and in those individuals, a sudden increase in BP to normal or slightly elevated levels can indicate AD. ○ Symptoms can vary from mild discomfort or a headache to a life-threatening emergency such as when the systolic BP rises to 300 mmHg. ○ Untreated AD can result in intracranial hemorrhage, retinal detachment, seizures, or death. 	<p>Treatment/management options</p> <ul style="list-style-type: none"> ● Bladder drainage. <ul style="list-style-type: none"> ○ Acute UR: Perform an initial catheterization to drain the bladder (Cunha, 2014). ○ For chronic UR: <ul style="list-style-type: none"> ■ Consider intermittent catheterization, if the patient/caregiver can be trained, and the patient also has overflow incontinence (Casey, 2011). ■ An indwelling urethral catheter may be indicated if intermittent catheterization is not appropriate, urine is causing skin irritation or contamination of wounds, frequent changes of the bed or clothing are causing discomfort or distress, and/or the patient requests catheterization (Casey, 2011). ○ Long-term indwelling urethral catheters (IUC) are associated with increased risk of infection (Casey, 2011; Newman & Strauss, 2013). ○ Catheter-associated urinary tract infection (CAUTI) is the most commonly reported hospital-acquired condition: CAUTI is associated with extended hospital stays and increased costs, morbidity, and mortality (American Nurses Association [ANA], 2015). ○ To prevent CAUTI, national guidelines recommend (ANA, 2015; Gould et al., 2009): <ul style="list-style-type: none"> ■ Use an IUC for the shortest time possible. ■ Follow evidence-based practices to prevent infection as outlined by the CDC (Gould et al., 2009) and ANA (2015). ■ Remove the catheter as soon as practical, assess bladder emptying, and consider alternatives to IUC as appropriate. ● Treat the underlying causes of UR. ● For patients with SCI, an effective bladder management program and ongoing follow-up is needed to prevent UR and the potential complication of AD (Krassioukov et al., 2009).

caused by spinal cord injury; birth defects

Polyuria		
Description	Assessment	Interventions/Management
<p>affecting the spinal cord, such as spina bifida.</p> <ul style="list-style-type: none"> ○ Multiple sclerosis, diabetic mellitus, CVA, and tumors. ○ Pelvic/rectal surgery. ○ Pharmacological agents: <ul style="list-style-type: none"> ■ Anticholinergic/antispasmodics (e.g., oxybutynin chloride, propantheline bromide, hyoscyamine sulfate, tolterodine tartrate). ■ Tricyclic antidepressants (e.g., amitriptyline hydrochloride, imipramine hydrochloride). ■ Antihistamines (e.g., diphenhydramine hydrochloride, cetirizine hydrochloride). ■ Decongestants (e.g., ephedrine sulfate, phenylephrine hydrochloride, pseudoephedrine hydrochloride). ■ Cardiovascular drugs (e.g., nifedipine). ■ Anticonvulsants (e.g., carbamazepine). ■ Skeletal muscle relaxants (e.g., cyclobenzaprine hydrochloride). ■ Antianxiety drugs (e.g., diazepam). ■ Other drugs: nonsteroidal anti-inflammatory drugs; amphetamine sulfate; opioid analgesics; epidural anesthesia (e.g., pelvic, hip, abdominal or rectal surgery). ● Use of a pessary, diaphragm, bladder-neck support prosthesis, or a similar device. ● Vaginal childbirth. ● Cystocele; rectocele. ● Increased age; male gender; lack of voiding prior to surgery. ● Heavy metal poisoning. 	<p>Assessment parameters</p> <ul style="list-style-type: none"> ● History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. <ul style="list-style-type: none"> ○ Recent surgeries; use of a pessary, diaphragm, bladder-neck support prosthesis, or a similar device; medications; and bowel history, etc. ○ Urinary stream characteristics, voiding behaviors, and abdominal distention. ● Perform or refer for a physical assessment. <ul style="list-style-type: none"> ○ Examine the lower abdomen. ○ Lightly tap on the lower abdomen to percuss the bladder area for distention (NKUDIC, 2014). <p>Tests/diagnosis</p> <ul style="list-style-type: none"> ● Urinalysis (Cunha, 2014; NKUDIC, 2014). ● Measure postvoid residual (NKUDIC, 2014). ● Prostate fluid sample for signs of inflammation/infection (Cunha, 2014). ● Blood test for prostate-specific antigen (PSA) to rule out prostate cancer, bladder scan (ultrasound), cystoscopy, X-ray, computed tomography (CT) scan, urodynamic tests, and electromyography (Cunha, 2014; NKUDIC, 2014). 	<ul style="list-style-type: none"> ● Bladder training can help recover functions of the detrusor muscle and urethral sphincter to restore normal bladder capacity and avoid urinary incontinence and retention. ● Based on an analysis of 24 trials (RCTs and quasi-randomized trials), biofeedback in addition to pelvic floor muscle training may be beneficial for women with UR (Herderschee, Hay-Smith, Herbison, Roovers, & Heineman, 2011). ● Sacral nerve stimulation is a recognized treatment in selected patients for urinary or fecal incontinence of neurogenic origin when conservative measures have failed (Faucheron, Chodez, & Boillot, 2012). ● In a study of patients with neurogenic bladder after SCI, electroacupuncture plus bladder training was more effective in improving bladder function compared to only bladder training (Xia, Fan, Tang, & Ye, 2014). The bladder training program involved drinking a fixed amount of water at specific intervals, limiting the total water intake to 2,000 ml per day, timed voiding, and intermittent catheterization. ● Other interventions to consider: <ul style="list-style-type: none"> ○ Urethral dilation, urethral stents, or surgery to relieve strictures; repair of a cystocele/rectocele; and prostate surgery (NKUDIC, 2014). ○ Medications: There are limited options for management of UR with medications. ○ Medications may slow the growth or shrink the size of the prostate to relieve symptoms (e.g., dutasteride, finasteride), or drugs such as alpha-adrenergic antagonists (e.g., alfuzosin, tadalafil, tamsulosin, terazosin) can relax muscles of the bladder outlet and prostate to relieve blockage (NKUDIC, 2014; Shenot, 2014).

Polyuria		
Description	Assessment	Interventions/Management
		<ul style="list-style-type: none"> ○ Cholinergic agents (e.g., bethanechol chloride) might be considered if retention is caused by impaired contractility of the detrusor muscle (Casey, 2011). However, bethanechol's effectiveness is uncertain (Shenot, 2014), and it is contraindicated if the strength or integrity of the bladder is unknown, or there is a possibility of an obstruction in the urinary tract ("Bethanechol chloride," 2009). ○ Acute UR can cause severe pain and chronic retention that may lead to UTIs (Casey, 2011); therefore, analgesics or antibiotics might be needed. ○ No medications are available to relieve urinary tract obstruction. ○ Contain incontinence with disposable absorbent pads or underpants. <p>Patient/caregiver education</p> <ul style="list-style-type: none"> ● Review medications, their expected effects and side effects. ● Instruct to avoid constipation and empty the bladder on a schedule of every 2 to 3 hours when awake (WOCN, 2007). ● If indicated, teach double-voiding, indwelling urinary catheter care, intermittent urinary catheterization procedures, and pessary care. <p>Indications for referral</p> <ul style="list-style-type: none"> ● Referral to a surgeon or other healthcare providers may be necessary to treat: <ul style="list-style-type: none"> ○ Underlying causes of UR. ○ Complications of UR: upper urinary tract infections, bladder damage, kidney damage, and/or incontinence after prostate, tumor, or cancer surgery (NKUDIC, 2014; WOCN, 2007).

Delirium/Mental Status Changes

Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> ● Delirium is an acute, transient, usually reversible alteration of consciousness that is accompanied by changes in cognition and attention; the onset is rapid, and the severity usually fluctuates (Huang, 2013). ● It is the most common complication in hospitalized patients, ages 65 years and over (Harvard Medical School, 2011). <p>Risks/etiology</p> <ul style="list-style-type: none"> ● Anything that causes a disruption in brain activity can cause delirium (Harvard Medical School, 2011). ● Medications/drugs are a common cause of delirium, particularly anticholinergics, psychoactive drugs, and opioids (Huang, 2013). <ul style="list-style-type: none"> ○ A decrease in acetylcholine, which is an important neurotransmitter, can cause an alteration in the ability of the nerve cells to communicate via the normal pathways, and many anticholinergic drugs reduce the effect of acetylcholine, which can result in delirium (Harvard Medical School, 2011; Huang, 2013). ○ See the Section about pharmaceuticals for additional information about medications. ● Other risks/contributive factors (Huang, 2013): <ul style="list-style-type: none"> ○ Substance and alcohol abuse. ○ Inflammation; infection. ○ Hypoxia; seizures; CVAs; migraines. ○ Hypo/hyperglycemia; undernutrition; dehydration; acid-base/fluid and electrolyte abnormalities; thiamin or vitamin B12 deficiencies. ○ Physical trauma/injuries; uncontrolled pain; tumors. ○ Recent exposure to anesthesia and surgery. ○ Hospitalization; pain; sleep deprivation; emotional stress. 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> ● Difficulty focusing attention, confusion, disorientation, inappropriate behavior, hallucinations, delusions, paranoia; and altered patterns of eating and sleeping (Huang, 2013). ● Symptoms and level of consciousness may fluctuate, and can improve during daytime and worsen at night (Huang, 2013). ● There are two types of delirium (Harvard Medical School, 2011; Huang, 2013): <ul style="list-style-type: none"> ○ Hyperactive: person is confused, noisy, agitated, and possibly belligerent. ○ Hypoactive: person is confused, withdrawn, lethargic, sleepy, and is difficult to rouse from sleep. ○ Older adults most often present with the hypoactive type of delirium. <p>Assessment parameters</p> <ul style="list-style-type: none"> ● Consider that any alteration or change in mental status is due to delirium until proven otherwise (Huang, 2013). ● History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. <ul style="list-style-type: none"> ○ Assess the timing of onset: Was the onset of the altered mental status or confused state acute, or do the symptoms/behaviors “come and go?” ○ Assess the patient’s attention level: Is the patient able to follow what is being discussed and focus on specific tasks he/she is asked to perform? ○ Review alcohol use. ○ Comprehensively review the patient’s medications including prescription and OTC medications, and/or herbal/natural agents. 	<p>Treatment/management options</p> <ul style="list-style-type: none"> ● The goals of management include maintenance of a safe, stable, and secure environment; and correction of the causative factors. Effective management requires interdisciplinary care. ● Treat any causative factors. ● Correct imbalances or deficiencies in hydration and nutrition, and maintain proper fluid and electrolyte balance. ● Some medications may be used to treat symptoms, but they do not correct the underlying problem (Huang, 2013): <ul style="list-style-type: none"> ○ Low-dose haloperidol may lessen agitation or psychotic symptoms. ○ Benzodiazepines are the drugs of choice for the treatment of delirium caused by alcohol and drug withdrawal, but they should not be used to treat delirium caused by other conditions because they may exacerbate confusion and sedation. ● Discontinue any medications suspected of aggravating the condition. ● Maintain a quiet, well-lit environment, and frequently re-orient the patient. <p>Patient/caregiver education</p> <ul style="list-style-type: none"> ● Explain the cause and transient nature of the delirium to the family/caretaker, which may enable them to cope better with the patient’s behavior. ● Advise the family that resolution of delirium can be a slow process, and it might take several weeks or months for the cognitive deficits to resolve.

Delirium/Mental Status Changes		
Description	Assessment	Interventions/Management
<ul style="list-style-type: none"> Older age (i.e., older people are particularly vulnerable to reduced cholinergic transmission). 	<ul style="list-style-type: none"> Perform or refer for a head-to-toe physical assessment: <ul style="list-style-type: none"> Examine the skin; ear, nose, and throat; and the genitourinary and gastrointestinal systems for possible areas of infection. Assess the vital signs, hydration status, and neurological status. <p>Tests/diagnosis</p> <ul style="list-style-type: none"> Testing usually includes (Harvard Medical School, 2011; Huang, 2013): <ul style="list-style-type: none"> A mental status examination: A screening tool such as the Confusion Assessment Method tool can be used to identify the key features of delirium (i.e., acute, fluctuating changes in cognition; inattention/inability to focus or follow what is said; plus, altered consciousness [e.g., hypo/hyperactive] or disorganized thinking). Tests to rule out infection (e.g., complete blood count, urinalysis, chest x-ray, blood cultures, urinalysis). Neurological tests to rule out CVA or other neurological conditions (e.g., CT scan, magnetic resonance imaging). Basic metabolic panel to evaluate electrolytes, blood urea nitrogen, creatinine level, serum blood levels of any medications suspected of having toxic effects, and a urine drug screen. If diagnosis is unclear, further testing may include arterial blood gases, liver function studies, analysis of the cerebrospinal fluid to rule out neurological infection or hemorrhage, and testing for heavy metals (Huang, 2013). 	<p>Indications for referral</p> <ul style="list-style-type: none"> Referrals to an infectious disease specialist, neurologist, urologist, nutritionist, or geriatric specialist may be needed for treatment of underlying causes/diseases. A psychiatric evaluation may be needed to rule out dementia or depression, and to assess psychological symptoms of delirium.

Psychological Conditions

Description	Assessment	Interventions/Management
<p>Definition</p> <ul style="list-style-type: none"> • An inability to recognize or act on the urge to void due to impaired cognition related to various, interrelated psychological factors (ICS, 2013; WOCN, 2007). <p>Risks/etiology</p> <ul style="list-style-type: none"> • Psychological factors such as anxiety, depression, and personality types have been associated with UI (Perry, McGrother, Turner, & the Leicestershire MRC Incontinence Study Group, 2006). • Multiple studies have demonstrated an association between UI and depression, but it remains uncertain if UI is the cause or result of depression (Avery et al., 2013; Hung, Awtrey, & Tsai, 2014; Martin, Rabinowitz, & Montague, 2011; Melville, Fan, Rau, Nygaard, & Katon, 2009; Perry et al., 2006; Sims, Browning, Lundgren-Lindquist, & Kendig, 2011; Tettamanti, Altman, Iliadou, Bellocco, & Pedersen, 2013). <ul style="list-style-type: none"> ◦ Some studies have found that major depression increases the odds of incident incontinence (Melville et al., 2009; Sims et al., 2011; Tettamanti et al., 2013). ◦ Other studies suggest that depression may be the result of UI (Avery et al., 2013; Hung et al., 2014; Perry et al., 2006). • Risk factors for depression include: family or personal history of depression, history of substance abuse, chronic medical illness, stressful life events (e.g., loss of loved one, divorce), traumatic event (e.g., auto accident), major life changes (e.g., job change, financial problems), and domestic abuse/violence (Mitchell et al., 2013). 	<p>Signs/symptoms and clinical indicators</p> <ul style="list-style-type: none"> • Symptoms of depression can include: depressed mood; diminished interest or pleasure in most or all activities; feelings of worthlessness, guilt/regret, or hopelessness; altered appetite (increased/decreased); weight gain or loss; fatigue/loss of energy; persistent sadness, feeling discouraged, irritability, or sleep disturbance (increased/decreased); impaired concentration or decision making; and suicidal ideation/behavior (Mitchell et al., 2013). • Martin et al. (2011) in a study of psychiatric inpatients found that patients with UI compared to those without UI had higher rates of intellectual disability, impaired cognition and self-care skills, aggressive behavior, anhedonia (i.e., inability to experience pleasure in normally pleasurable acts), mania, and positive psychotic symptoms. <p>Assessment parameters</p> <ul style="list-style-type: none"> • History: Obtain a history of the past/present illness from the patient, family, caregiver, significant others, and/or the medical record including the onset and description of symptoms. <ul style="list-style-type: none"> ◦ Identify if there has been a recent change in behavior or function, a prior history of depression, and past or present psychosocial stressors such as a significant loss (e.g., death of loved one, divorce), life changes (e.g., job changes, financial problems), or domestic abuse/violence (Mitchell et al., 2013). ◦ Review the medication history (i.e., prescribed and OTC medications, and herbal/natural agents), and identify if there is a history of substance abuse or dependence. 	<p>Treatment/management options</p> <ul style="list-style-type: none"> • Effective treatments for depression include pharmacologic treatment, psychotherapies (e.g., interpersonal therapy, cognitive behavioral therapy), combined antidepressants and psychotherapy, addressing self-care responsibilities, and increasing exercise and social interactions/activities (Mitchell et al., 2013). • Antidepressants are effective in reducing symptoms, and improving quality of life. <ul style="list-style-type: none"> ◦ Caution should be used in the elderly because of the potential for decreased renal and hepatic function, and tertiary amine tricyclics should be avoided in older patients because of the high incidence of orthostatic hypotension, sedation, and cognitive and cardiac effects (Mitchell et al., 2013). ◦ Tricyclic antidepressants can increase the risk of UR (Casey, 2011; NKUDIC, 2014). • For initial treatment of depression, the American Psychiatric Association (APA) recommends (APA, 2010): <ul style="list-style-type: none"> ◦ A selective serotonin reuptake inhibitor (e.g., fluoxetine, sertraline, paroxetine), a nonselective reuptake inhibitor (e.g., bupropion), a serotonin-norepinephrine reuptake inhibitor (e.g., venlafaxine, duloxetine), or a mixed action agent (e.g., mirtazapine). ◦ Nonselective monoamine oxidase inhibitors (e.g., isocarboxazid, phenelzine), should be reserved for patients who do not respond to other treatments. <p>Patient/caregiver education</p> <ul style="list-style-type: none"> • Review medications, their expected effects and side effects, and the importance of adherence to the medication regimen.

Psychological Conditions		
Description	Assessment	Interventions/Management
<ul style="list-style-type: none"> As discussed in the Section about pharmaceuticals, associations have been found between UI and psychoactive drugs such as antidepressants, tranquilizers, narcotics, and hypnotics (Martin et al., 2011). 	<ul style="list-style-type: none"> A review of the medical history, brief review of systems, and a focused physical examination is important to identify comorbid conditions that might cause or increase the risk for depression such as: dementia, hypothyroidism, cardiovascular disease, Parkinson's disease, chronic pain, cancer, multiple sclerosis, etc. (Mitchell et al., 2013). <p>Tests/diagnosis</p> <ul style="list-style-type: none"> Self-administered or clinician-administered tests are available to screen for depression. Examples of reliable and validated instruments for depression screening (Greenberg, 2012; Mitchell et al., 2013; PsychCongress Network, n.d.; Walker, Roback, & Welch, 2008): <ul style="list-style-type: none"> Self-administered tests: Beck Depression Inventory; Geriatric Depression Scale. Clinician-administered test: Hamilton Rating Scale for Depression. 	<ul style="list-style-type: none"> Encourage healthy behaviors: daily exercise, adequate sleep, good nutrition, decreased use of deleterious substances (e.g., tobacco, alcohol, etc.), and participation in pleasurable activities (APA, 2010; Mitchell et al., 2013). <p>Indications for referral</p> <ul style="list-style-type: none"> Referral to an appropriate psychiatric or psychological care provider is warranted for evaluation/management of depression or other psychological disorders, and/or for atypical or adverse reactions or side effects from medications or the treatment regimen.

Glossary

Beck Depression Inventory: A widely used self-rating inventory (i.e., 21 items; a 13-item short form is available) that measures characteristic attitudes and symptoms of depression, and provides information about the severity of the symptoms and whether the symptoms are more physiological, cognitive, or mood-oriented in nature (Walker et al., 2008).

Bladder diary: A daily record of bladder habits (usually for 3 days), which typically documents time, frequency, and volume of both voluntary and involuntary voiding. Additional documentation may include the presence or absence of an urge to void, activity at the time of involuntary voiding, liquid intake (type, time, amount), and the use of incontinent products (ICS, 2013).

Bladder neck: The area where the urethra joins the bladder that is comprised of muscles, known as the internal sphincter, which helps urine stay in the bladder (NKUDIC, 2014).

Cystocele: Bulging of the bladder into the vaginal wall, due to weakening and stretching of the pelvic floor muscles and supporting tissues between the bladder and vagina; the abnormal position of the bladder may cause it to press against and pinch the urethra (NKUDIC, 2014). A cystocele can result in urinary retention or urinary incontinence.

Fecal/stool impaction: A mass of stool in the bowel sufficiently large and hard enough to cause a mechanical obstruction. A fecal impaction in the sigmoid colon can cause mechanical obstruction of the urethra that interferes with urine outflow. It also can create pressure on the bladder and stimulate increased bladder contractions resulting in urinary urgency and frequency.

Geriatric Depression Scale (GDS): Originally created as a 30-item, self-rating, questionnaire to measure depression, GDS has been widely tested and used with older adults in community, acute, and long-term settings (15-item short form is now available that takes about 7 minutes to complete); it does not assess suicidality (Greenberg, 2012).

Glycosylated hemoglobin (Hgb A1c): A minor hemoglobin that results when normal hemoglobin is modified by glycosylation in a high-glucose environment. Changes in levels of hemoglobin A1c are used to evaluate the long-term response of individuals to the management and control of diabetes mellitus. Increased levels of hemoglobin A1c reflect increased levels of serum glucose. Hyperglycemia may cause excessive urine output that can challenge bladder control.

Hamilton Rating Scale for Depression: The 21-item scale has been used for many years to determine the severity of depression before, during, and after treatment; it is intended to be administered by a clinician who is experienced with psychiatric patients (PsychCongress Network, n.d.).

Overflow incontinence: An involuntary loss of urine (e.g., frequent small urination; dribbling) that occurs when the bladder becomes full/over distended and is unable to empty properly because the bladder cannot contract strongly enough, or because the urethra is blocked (NKUDIC, 2013; Shenot, 2014; WOCN, 2007).

Pessary: An intravaginal device that is placed into the vaginal vault to prevent the prolapse of pelvic organs or to support the bladder neck to treat stress urinary incontinence. Pessaries are available in various shapes and sizes, and they require fitting by a healthcare provider similar to how a diaphragm is fitted (NKUDIC, 2013).

Postvoid residual (PVR): The amount of urine remaining in the bladder after voiding has occurred; residual urine of 100 mL or more indicates that the bladder is not emptying effectively (NKUDIC, 2014). It is recommended to obtain a PVR reading within 10 to 15 minutes after voiding (WOCN, 2007).

Rectocele: A bulging of the rectum into the vagina due to weakening and stretching of the muscles and supportive tissue between the rectum and vagina (NKUDIC, 2014). A rectocele can contribute to urinary retention or urinary incontinence (WOCN, 2007).

Stress urinary incontinence: An involuntary loss of urine due to poor pelvic muscle tone and urethral sphincter weakness, which is caused by a sudden increase in intra-abdominal pressure (e.g., coughing, sneezing, lifting) and a corresponding increase in bladder pressure (NKUDIC, 2013).

Transit study: A radiologic test to evaluate how well the bowel propels food along the gastrointestinal tract.

Urge urinary incontinence: An involuntary loss of urine, which is thought to be caused by premature contractions of the bladder that occurs when a person is aware of the need to void, but is unable to inhibit the urge long enough to reach a toilet (NKUDIC, 2013; Shenot, 2014). It is also referred to as overactive bladder (Society of Urologic Nurses and Associates, 2008; Stewart, 2010).

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Appendix

Reversible Causes of Acute/Transient Urinary Incontinence: A Guide for Patients

Introduction

This guide has been developed to provide basic information about reversible causes of acute/transient urinary incontinence for patients and their caretakers. The guide provides a brief description of urinary incontinence: definition, common causes and symptoms, tips to maintain a healthy bladder, and examples of available resources.

Notify your wound, ostomy and continence (WOC) nurse or healthcare provider if you experience any of the problems or symptoms described in this guide. Discuss the tips for maintaining a healthy bladder with your WOC nurse or healthcare provider to see if you can benefit from any of the tips.

Definition: Urinary Incontinence

Urinary incontinence is a loss of control over passing urine. Urine loss can occur in very small amounts (enough to only dampen underwear), or very large amounts (requiring a change of clothing). There are many causes for loss of bladder control. Fortunately, many of these causes can be corrected.

Common Causes/Symptoms of Urine Loss in Women

- **Hormonal changes.**
 - Thinning or drying of the skin and tissues in and around the urinary opening and vagina occurs due to the loss of the hormone estrogen, which happens most often after menopause, but it can occur due to other causes such as the surgical removal of ovaries, radiation, or chemotherapy.
 - Lack of estrogen can cause the bladder to become irritated. It may also cause weakening of the muscle that controls the urinary opening. This may result in:
 - A need to pass urine quickly and often.
 - Pain when passing urine.
 - Difficulty holding back from passing urine.
 - Involuntary leakage of urine from the bladder.
 - Recurrent urinary infections.
- **Irritants:** perfumed bath salts, soap, menstrual products, cleansing wipes, douches, condoms, spermicides, and chlorine in pool water.

Common Causes/Symptoms of Urine Loss in Women and Men

- **Bladder infection:** Occurs when a large number of bacteria are in your bladder. It can cause the need to pass urine quickly and often. Symptoms of a bladder infection include:
 - A burning sensation or pain when passing urine.
 - Passing very small amounts of urine.
 - Waking from sleep to pass urine.
 - An urgent need to pass urine with an involuntary loss of urine.
 - The need to strain or push to pass urine.

- Bloody urine.
- Back pain or pain over the bladder area.
- Chills and fever.
- **Constipation or stool impaction:** Constipated or impacted stool can press on the bladder and cause:
 - A strong need to pass urine quickly and often.
 - An involuntary loss of urine.
 - Difficulty with urine leaving the bladder.
- **Muscle weakness/loss of mobility.**
 - Decreased strength of the muscles holding your bladder makes it difficult to hold urine in the bladder.
 - Decreased mobility and dexterity with a loss of function of the legs, arms, and hands make it difficult to get to the bathroom, remove clothing, and get positioned to pass urine. Loss of mobility, function, and/or dexterity can result from many chronic conditions or diseases such as arthritis, obesity, cardiovascular disease, strokes, Parkinson's disease, multiple sclerosis, musculoskeletal trauma, etc.
- **Bladder irritants.**
 - Some substances contained in foods or drinks can irritate the bladder and create a need to pass urine right away, and may result in urine loss.
 - Major bladder irritants include caffeine, alcohol, artificial sweeteners, and acidic foods and fluids.
- **Medications.**
 - Certain medications may cause or worsen loss of bladder control. Such medicines include water pills, sleeping pills, muscle relaxants, anti-anxiety pills, blood pressure pills, cold and allergy remedies, pain pills, and pills for diarrhea.
 - Because these medications may be important to your overall health, do not change doses or stop taking any medications unless you consult with your healthcare provider.
- **Large volume of urine output.**
 - Passing very large amounts of urine is commonly caused by diabetes/high blood sugar, heart failure, water pills, caffeine, alcohol, and drinking large amounts of water and other liquids.
 - Excessive urine output at night can be caused by sleep apnea.
 - The need to pass very large amounts of urine can cause a loss of bladder control.
- **Urinary retention.**
 - Urinary retention occurs when you are unable to empty all of the urine from your bladder, which can lead to overflow and leakage.
 - Some things that cause urinary retention include an enlarged prostate gland, narrowing of the urinary opening, pelvic organ prolapse (loss of muscle support of the pelvic organs), constipation or stool impaction, medicines, spinal cord injury, a stroke, and scar tissue from bladder or prostate surgery.
- Symptoms of urinary retention include:
 - Difficulty with starting urine flow.
 - Urine flow that stops and starts.
 - A feeling that your bladder is not empty after passing urine.
 - Straining to pass urine.
 - Involuntary urine loss and/or dribbling urine.

- A strong need to pass urine quickly.
- Recurrent urinary tract infections.
- Waking frequently during the night to urinate.
- **Mental, emotional, or psychological changes.**
 - Delirium is confusion that happens quickly. It can happen within hours to a few days.
 - Causes of delirium include serious illness such as a stroke, infection, surgery and anesthesia, hospitalization, and reactions to medicines.
 - Delirium can make it difficult to know when and where you need to pass urine, which can lead to involuntary urine loss.
 - Depression/feelings of sadness may interfere with your ability to recognize and respond to the need to pass urine, which may cause urine loss.

Tips to Maintain a Healthy Bladder

- Empty your bladder an average of every 3 to 4 hours while awake to maintain dryness and prevent any mishaps.
- Drink enough liquids.
 - Drink 6 to 8 (8 ounce) glasses of fluid per day (if tolerated) such as water and decaffeinated or non-alcoholic beverages.
 - Avoid drinking more than 10 ounces of liquid at any one time or more than 3 quarts per day.
 - Limit fluid intake after 6:00 p.m.
 - Limit or eliminate the use of irritants, which may be the cause of incontinence such as coffee, tea, chocolate, colas, artificial sweeteners, and alcohol.
- Take note and limit any foods or fluids that may irritate your bladder such as citrus fruits.
- Include adequate fiber in your diet (20 grams or more per day) by increasing the intake of whole grain bread or cereal, fruits, and vegetables. You may also need to use a powder or pill form of fiber.
- Avoid use of known irritants in hygiene products (perfumed toilet paper, soaps, powders, feminine sprays, vaginal cleansers, bubble baths), and highly chlorinated pool water.
- If using condoms, use lubricated condoms without a spermicide.
- Establish a regular bowel routine.
 - Do not put off the urge to move your bowels.
 - Choose a regular time to move your bowels, such as after breakfast.
 - Make sure you have privacy and that your feet are on the floor or a footstool when sitting on the toilet.
 - Use habits that encourage elimination, such as drinking a warm beverage.
- Participate in regular, moderate exercise such as walking.
- Quit smoking tobacco and/or using other tobacco products.
- Contact your healthcare provider if you experience any change in your bladder or bowel habits.
- Women who have persistent vaginal and urinary symptoms due to menopause should discuss their symptoms with a healthcare provider and consider if vaginal estrogen is appropriate to use.

Examples of Available Resources

The following organizations may provide information to help you learn more about urinary incontinence:

- **Interstitial Cystitis Association**
www.ichelp.org
g 703-442-2070
- **National Association for Continence (NAFC)**
www.nafc.org
800-252-3337, toll free
- **National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC)**
www.niddk.nih.gov
800-891-5390, toll free
- **The Simon Foundation for Continence**
www.simonfoundation.org
800-237-4666, toll free
- **Urology Care Foundation**
www.urologyhealth.org
800-828-7899, toll free