

Genitourinary Emergencies in Older Adults



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KEYWORDS

- Urinary tract infections • Urinary incontinence • Pelvic organ prolapse • Scrotal pain
- Urologic trauma • Varicoceles

KEY POINTS

- Asymptomatic bacteriuria in older adults is common. It is frequently misdiagnosed and inappropriately treated.
- Urinary tract infections in geriatric patients are more likely to be complicated, caused by a multidrug-resistant organism, and require a longer course of treatment.
- Urinary incontinence has a broad differential; emergent conditions include urinary tract infections, spinal cord pathology, and delirium.
- Abuse of older adults is under-recognized, whether in the form of neglect, physical abuse, or sexual abuse.
- Microscopic hematuria should not be dismissed and should always be referred for outpatient follow-up.

INTRODUCTION

Older adults comprise 15% of the US population and are expected to reach 21% in 2040.¹ With this population growth comes a more pronounced use of emergency care,² necessitating a thorough understanding of the unique considerations of this age group. Many genitourinary (GU) complaints, such as retention, incontinence, pelvic organ prolapse, and urinary tract infections (UTIs), are more likely to occur in older adults.^{3–5} However, older adults may be less likely to seek care for GU complaints,⁶ and when they do, they are less likely to receive evidence-based care.⁷ Older adults' emergency department (ED) visits may further be complicated by acute or chronic

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cognitive impairments limiting the ability to obtain an adequate history, shame or embarrassment related to the sensitive nature of GU complaints as well as challenges associated with the fast-paced nature of EDs themselves. Moreover, several life-threatening conditions may masquerade as benign genital complaints, as summarized in **Box 1**.

BACKGROUND

Pertinent History

Sexual history

Clinician questions should avoid assumptions of heterosexuality or abstinence when discussing a geriatric patient's sexual behavior⁸; lesbian, gay, bisexual, and transgender people make up 5% to 10% of the population overall⁹ and 25% of patients in their 80s are sexually active.¹⁰ One approach to start the conversation with the patient may be to ask, "Are you currently satisfied with your sexual activity?" Follow-up questions regarding gender identity, sexual orientation, number of partners, frequency and type of activity, penile implants, hormone replacement, and medications can ensue. Lesbian, gay, bisexual, and transgender older adults are less likely to divulge their sexual history to health care providers for fear of discrimination and refusal of care,¹¹ especially given that they grew up in a time when their behavior was considered pathologic.

Medications

Polypharmacy is common among older adults¹² and may contribute to acute urologic complaints. Older adults presenting to the ED should have their medications reviewed (prescribed, over the counter, and recreational) for iatrogenic causes of their presentation,¹³ specifically for medications with peripheral alpha-1 blockers and anticholinergic properties.¹⁴ Medications used to treat menopausal symptoms or erectile dysfunction may not be thought of as "medications" and should be specifically inquired about as well.

Mistreatment and abuse

Older adults should be screened for elder abuse, especially those with cognitive or physical impairment. The most common type of mistreatment is neglect, such as improper toileting, poor hygiene, and delay in seeking care, and should raise a red flag for further inquiry.

Pertinent Physical Examination

Evaluating a patient with a GU complaint should include abdominal palpation to detect a distended bladder as well as abdominal masses and chaperoned genital and rectal examinations. All patients with irritative voiding symptoms should be offered a genital examination, because they may not recognize the presence of genital culprit for their symptoms or be too embarrassed to disclose it to the physician. Fecal impaction,

Box 1

Life-threatening conditions presenting as urogenital complaints

- Emphysematous pyelonephritis
- Incarcerated hernia
- Necrotizing fasciitis (Fournier's gangrene)
- Renal infarction
- Testicular torsion

prostate enlargement or tenderness, perineal sensation, and abnormal sphincter tone should be elicited on rectal examination.¹⁵ Positioning a patient in a manner that allows adequate GU examination and visualization of the perineum, such as the lithotomy position, may be logistically challenging and uncomfortable for older adult patients and require the assistance of other health care team members. Patients suspected to have a hernia or pelvic organ prolapse should be examined while standing, if possible. A neurologic examination is essential to identify spinal cord abnormalities and peripheral neuropathy.¹⁶ Signs of physical or sexual abuse may be uncovered while performing a physical examination and should be addressed immediately. Logistical difficulties should not deter the physician from performing a thorough examination.

URINARY TRACT PATHOLOGY

Acute Kidney Injury

Older adults are susceptible to acute kidney injury (AKI) given that renal blood flow decreases by 10% every decade after the age of 50, especially in patients with hypertension and chronic heart disease.¹⁷ When compared with those without AKI, patients with AKI are more likely to be older, have underlying chronic kidney disease, progress to end-stage renal disease, and have increased mortality, especially in the setting of sepsis or heart failure.^{18,19}

Older adults with renal failure are more likely than younger adults to present with vague concerns and report symptoms of weakness, dizziness, or feeling tired and generally unwell.²⁰ Questions regarding urine color and output, uremic symptoms (such as nausea, vomiting, and headache), and fluid overload are important. Physical examination ranges from unremarkable to signs of dyspnea with rales, disorientation, and an ill appearance.

Serum creatinine is the most commonly used laboratory value to estimate kidney function.²¹ However, the levels can be confounded by volume overload, low body weight, and a decrease in production during acute illness, particularly in older adults.²² Calculating the creatinine clearance by taking into account the patient's weight and age is a more reliable estimate for renal function than serum creatinine alone.⁹

An investigation of the cause of the AKI requires consideration of prerenal (hypovolemia), renal (intrinsic renal injury), and postrenal (obstruction at any level along the urinary tract) etiologies, which may occur concurrently or independently. For example, AKI in the setting of sepsis may be due to exposure to nephrotoxic drugs, diminished renal flow secondary to inflammation from sepsis, hypovolemia, or underlying renal disease.¹⁹

The managing the underlying cause of AKI improves symptoms and may resolve the injury. Treatment for AKI in older adults does not generally differ from that in younger patients, with some exceptions. Comorbidities such as diastolic heart failure require frequent reassessment during fluid resuscitation to avoid fluid overload. Ethical considerations and shared decision making are necessary before starting a life-altering treatment such as dialysis.²³

Hematuria

Hematuria may be visible (gross) or seen only on urinalysis (microscopic); the latter is commonly found incidentally during an evaluation for other complaints. A confirmation of the origin of any hematuria may require a physical examination and potentially a straight catheterization, because many patients reporting hematuria actually have a vaginal or rectal source of their bleeding. The timing of bleeding relevant to urination can give clues regarding its potential urinary source, as outlined in [Fig. 1](#).

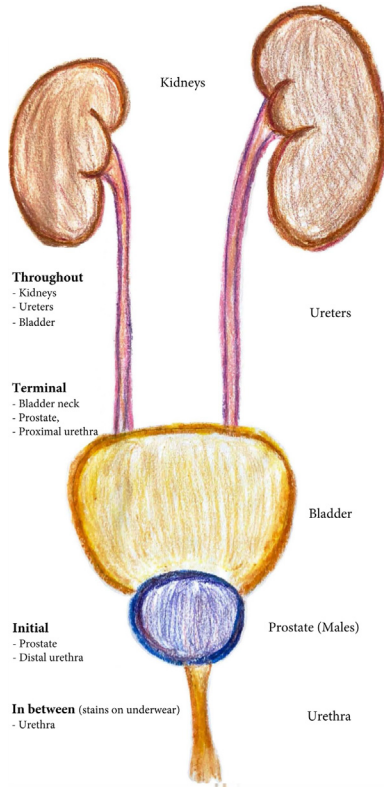


Fig. 1. The timing of hematuria.

Infection and anticoagulation are common causes of gross hematuria in older adults.²⁴ With advancing age, more worrisome etiologies should be considered, such as aortic dissection with extension into the renal vasculature, renal vein thrombosis, urinary tract tumors, or acute tubular necrosis. Myoglobinuria resulting from rhabdomyolysis should be considered in the differential of “blood in the urine” as well.

The etiology of the bleeding determines disposition and treatment. Benign prostatic hyperplasia (BPH) causing significant bleeding and hemodynamic instability is an indication for emergent intervention such as transurethral resection of the prostate.^{20,25} Asymptomatic microscopic hematuria is commonly due to BPH or urologic malignancy.²⁴ Older adults, particularly current or former smokers, have a high risk of malignancy and should follow up with urology.²⁶

Urinary Retention

Acute urinary retention (AUR) is the inability to voluntarily void and can lead to infection, hydronephrosis, and renal failure.²⁷ Comorbidities and polypharmacy can alter the presentation in older adults; AUR is often associated with fecal impaction, delirium, and constitutional symptoms.¹⁶ AUR affects up to 10% of men in their 70s and one-third of men in their 80s.²⁸ BPH is the most common cause of AUR in older males and age is the greatest risk factor for BPH. Obstructive symptoms such as frequency, nocturia, and dribbling of urine affect 25% of men by age 60 years and 45% by age 85.²⁵ However, it is prudent to avoid anchoring on BPH in older men and

consider other causes of AUR such as acute prostatitis, especially in the presence of additional symptoms such as fever.

There are few published data addressing occurrence rates and treatment of AUR in women.²⁹ The most common causes of AUR in women are detrusor underactivity, obstruction (such as bladder masses and pelvic organ prolapse), or iatrogenic (gynecologic surgery).³⁰ Causes of AUR in both sexes are summarized in **Box 2**. A list of medications causing retention is in **Box 3**.

Draining a distended bladder provides pain relief and should be done immediately unless contraindications exist, such as a recent urologic procedure.²⁸ Rapid emptying of an enlarged bladder has been reported to cause a vagal response, resulting in temporary hypotension and/or hematuria; however, studies show neither is common nor clinically significant.^{31,32} When a precipitating cause of AUR can be identified, such as infection, constipation, or medication, it should be rectified and a spontaneous voiding trial performed. The optimal timing for a voiding trial is unclear¹⁶; it is reasonable to attempt spontaneous voiding while in the ED and discharge the patient with an indwelling catheter if voiding fails. Men with BPH may be started on alpha blockers in the ED; alpha blockers before removal of the catheter increase the success rate of voiding.^{28,33} In contrast, there are few data for the benefit of alpha blockers in treating female urinary retention.³⁴ Alpha blockers may cause hypotension and are best taken at bedtime.²⁸ Follow-up in three days improves outcomes and reduces complications.²⁸

The postvoid residual (PVR) is the amount of urine retained in the bladder after a voluntary void and can be an objective measure of urinary retention. Clinically significant PVR volume is unclear; it is highly dependent on the clinical context and may range from 100 to 500 mL.²⁷ Asymptomatic individuals should be followed up in the primary care setting for the development of symptoms, especially those without prior history of elevated PVR volumes. Symptomatic patients with an elevated PVR or those with obstructive complications require an urgent urology referral.³⁵ Hospitalization is indicated when AUR precipitates or exacerbates comorbid medical conditions or is associated with acute renal failure, urosepsis, malignancy, or spinal cord compression.

Urinary Incontinence

Discerning the acuity of urinary incontinence is necessary, because 20% of older adults in the community have some element of urinary incontinence at baseline, a percentage that increases to 75% in residents of long-term care facilities.³⁶ There are

Box 2

Causes of AUR in males and females

- Bladder cancer or stones
- Infection
- Medication side effects
- Neurogenic bladder secondary to chronic diseases (eg, diabetes, peripheral neuropathy)
- Spinal compression
- Trauma (bladder, hip, pelvis, or urethra)
- Urethral stricture

Data from: Serlin DC, Heidelbaugh JJ, Stoffel JT. Urinary Retention in Adults: Evaluation and Initial Management. *Am Fam Physician*. 2018;98(8):496-503.

Box 3**Medications causing urinary retention**

Anticholinergics
 Antidepressants
 Antihistamines
 Antiparkinsonian agents
 Antipsychotics
 Muscle relaxants
 Nonsteroidal anti-inflammatory drugs
 Over-the-counter cold medications
 Sympathomimetics

Data from: American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. *J Am Geriatr Soc.* 2019;67(4):674-694; Curtis LA, Dolan TS, Cespedes RD. Acute Urinary Retention and Urinary Incontinence. *Emerg Med Clin North Am.* 2001;19(3):591-620.

different types of incontinence and more than one type may coexist (**Table 1**). Urge incontinence is more common in the older population. However, stress and mixed incontinence have similar frequencies in younger and older women.³ The differential diagnosis of acute incontinence is broad, encompassing GU, neurologic, and pharmacologic causes.^{6,37} A helpful mnemonic for the differential of acute incontinence is DIAPERS, summarized in **Table 2**.³⁸ The disposition and management depend on the underlying etiology.

URINARY TRACT INFECTIONS

Older adults are more likely than their younger counterparts to have a UTI, have a more complicated course, and require a longer course of antibiotics.⁵ In addition to frailty,

Table 1**Different types of urinary incontinence**

Type	Definition	Cause
Urgency incontinence	Involuntary urinary loss with a sensation of urgency	Idiopathic; systemic neurologic condition
Stress incontinence	Involuntary urinary loss with activities that increase intra-abdominal pressure (eg, exertion, sneezing, coughing)	Abnormal urethral closure; repetitive increase in intra-abdominal pressure.
Mixed incontinence	A combination of urgency and stress incontinence	Any of the causes above
Overflow incontinence	Incomplete urinary bladder emptying from detrusor underactivity or areflexia	Systemic neurologic conditions; urethral obstruction

Data from: Nitti VW, Blaivas JG. Urinary incontinence: Epidemiology, pathophysiology, evaluation, and management overview. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, eds. Campbell's Urology, ed 9. Philadelphia: WB Saunders Co; 2007: 2046; and Lukacz ES, Santiago-Lastra Y, Albo ME, Brubaker L. Urinary incontinence in women. *JAMA.* 2017;318(16):1592.

Table 2 Differential diagnosis of acute urinary incontinence: the DIAPERS mnemonic	
Causes of Acute Urinary Incontinence	
D	Delirium Dementia Diabetes (neurogenic bladder, hyperglycemia)
I	Infection (UTI) Inflammation
A	Atrophic vaginitis
P	Pharmacology (eg, anticholinergics, alpha agonists, calcium channel blockers)
E	Excessive urine output (eg, excessive intake, diuretics)
R	Restricted mobility
S	Stool impaction Sacral nerve root pathology

Abbreviation: UTI, urinary tract infection.

Adapted from: Lukacz ES, Santiago-Lastra Y, Albo ME, Brubaker L. Urinary incontinence in women. *JAMA*. 2017;318(16):1592; and Resnick NM. Initial evaluation of the incontinent patient. *J Am Geriatr Soc*. 1990;38(3):311-316.

many factors may predispose older adults to a worsened outcome and are summarized in [Table 3](#).

Clinical Presentation

Similar to their younger counterparts, UTIs in older adults can affect any location along the urinary tract. Older adults are less likely to have flank pain with pyelonephritis and may present with gastrointestinal or pulmonary symptoms.³⁹ As with all infections,

Table 3 Factors predisposing older adults to complicated UTIs ^{48,56}	
Risk Factor	Example
Anatomic and structural abnormalities	Urinary tract calculi Urinary tract tumor (including prostate) Extraurinary tumors compression ureters or bladder Urethral stricture Pelvic floor prolapse (eg, uterine prolapse, cystocele) Benign prostatic hypertrophy
Functional abnormalities	Urinary retention Urinary incontinence Neurogenic bladder Postmenopausal estrogen deficiency
Instrumentation and foreign bodies	Urethral catheterization (including Foley catheter placement) Cystoscopy Transurethral surgery Stent placement Lysis of calculi Penile implant
Systemic factors	Immunocompromise Renal transplant Single kidney

older adults are less likely to have a fever or leukocytosis, even in the presence of bacteremia.⁴⁰ Older adults are more likely to have chronic GU symptoms and the acuity of presenting symptoms must be clarified.^{25,36} Eliciting symptoms can be challenging in residents of long-term care facilities, especially those with catheters.^{41,42} Consensus-based recommendations on clinical presentations suggestive of a UTI in this population are presented in **Table 4**.⁴¹ These criteria have not been validated in the ED and should not substitute for the clinician's judgment.

Emphysematous pyelonephritis

Severe necrotizing infection of the kidney owing to gas-forming pathogens is more likely to occur in diabetics, especially in the presence of an obstruction, and carries a high morbidity and mortality.⁴³

Urinary tract infection in males

As infection ascends through the male GU tract, urethritis can progress to epididymitis, orchitis, or prostatitis (**Table 5**). Identifying the presence of prostatitis is important because this diagnosis requires longer antibiotic treatment and may present with systemic complications.⁴⁴ Patients with prostatitis may present with perineal or rectal pain with or without urinary symptoms as well as constitutional symptoms, such as fever and malaise, or AUR.⁴⁴ A digital rectal examination may reveal exquisite prostate tenderness. Prostatic massage in a patient with acute bacterial prostatitis may precipitate bacteremia and/or shock and is best avoided in immunocompromised or ill-appearing individuals.⁴⁵ A prostate abscess should be suspected in patients who remain febrile despite being on antibiotics for 36 hours or more.⁴⁶

Causes

UTIs in older adults are most likely due to a urinary pathogen, although sexually transmitted infections and noninfectious etiologies should be considered as well. Mumps and other systemic viral infections such as rubella, coxsackievirus, varicella, echovirus, and cytomegalovirus should be considered in patients with orchitis.⁴⁷

Diagnosis

Urine macroanalysis, microscopy, and culture

Obtaining a noncontaminated voided urine sample may be logistically challenging in older adults, particularly those with underlying incontinence or cognitive impairment. A single intermittent catheter can be used to obtain a sterile sample.⁴⁵ Indwelling catheters should be placed only in cases of acute outlet obstruction or critical illness to monitor urinary output.¹³ Acute bacterial prostatitis is diagnosed using midstream urine with or without expressed prostate secretions.⁴⁵

Table 4

Symptoms suggestive of a UTI in residents of long-term care facilities^{41,42}

No Indwelling Urinary Catheter	Indwelling Urinary Catheter in Place^a
New or worsening urgency	New or worsening fever
Frequency	Rigors
Suprapubic pain	Altered mental state
Frank hematuria	General malaise
Costovertebral angle tenderness	Lethargy
Urinary incontinence	New costovertebral angle tenderness

^a In the absence of another cause.

Table 5
Male genital infections^{44,47,55}

Disorder	Epididymitis	Orchitis	Acute Bacterial Prostatitis
History	Gradual onset of pain with radiation to lower abdomen, UTI symptoms	Rare in isolation. Usually progression of epididymitis with acute pain of 1 testis, which may spread to include whole scrotum	Symptoms of UTI and obstructed voiding. Systemic symptoms: fever, chills, malaise
Physical examination	Localized tenderness over the epididymis, pain relief with testicular elevation	Testicular swelling and tenderness	Prostate tenderness on rectal examination may be the only finding

Urine macroanalysis (dipstick testing) is used initially to screen for UTIs and microscopic urine evaluation is frequently the next step. Both tests have variable sensitivity and specificity for UTI in the general population (as detailed in **Table 6**).^{48,49} The usefulness and accuracy of dipsticks and microscopy seems to be comparable in older adults.⁵⁰

Table 6
Sensitivity and specificity of urinalysis and urine microscopy for a positive urine culture

Population	Test	Element	Sensitivity (%)	Specificity (%)
General population	Urine dipstick (macroanalysis)	Positive leukocyte esterase	77	59–96
		Positive nitrite*	81	95–98
		Positive leukocyte esterase and nitrite	35–84	98–100
Concomitant renal stone	Urine microscopy	WBCs >5/hpf	86	79
		WBCs >20/hpf	68	93
Catheter-associated UTI	Urine dipstick	Positive leukocyte esterase	87.5	72.0
		Positive nitrite*	25	100
	Urine microscopy	WBCs >5/hpf	73.3	90.0

Abbreviations: hpf, high-power field; WBC, white blood cells.

*Falsely negative in non-nitrate-reducing organisms (*S saprophyticus*, *Pseudomonas*, and enterococci).

Data From: Abrahamian FM, Krishnadasan A, Mower WR, Moran GJ, Talan DA. Association of pyuria and clinical characteristics with the presence of urinary tract infection among patients with acute nephrolithiasis. *Ann Emerg Med.* 2013;62(5):526-533; and Lane DR, Takhar SS. Diagnosis and Management of Urinary Tract Infection and Pyelonephritis. *Emerg Med Clin North Am.* 2011;29(3):539-552; and Lee SP, Vasilopoulos T, Gallagher TJ, Vasilopoulos T, Gallagher TJ. Sensitivity and specificity of urinalysis samples in critically ill patients. *Anaesthesiol Intensive Ther.* 2017;49(3):204-209; and Rehmani R. Accuracy of urine dipstick to predict urinary tract infections in an emergency department. *J Ayub Med Coll Abbottabad* 2004;16(1):4-7; and Tambiah PA, Maki DG. The relationship between pyuria and infection in patients with indwelling urinary catheters: a prospective study of 761 patients. *Arch Intern Med.* 2000;160(5):673-677.

Urine cultures should be sent on all older adults except those with simple cystitis.^{5,51} The definition of a UTI on urine culture depends on the method of collection; a lower threshold is required in catheterized samples than in spontaneously voided ones.⁴⁵ Recurrent UTIs secondary to mixed enteric bacteria in straight-catheterized samples should raise suspicion of an enteric urinary fistula.⁴⁵

Imaging

Emergency medicine physicians should maintain a low threshold of imaging in ill-appearing older adults and those with multiple comorbidities to assess for the presence of a complication, such as renal stones, renal or perinephric or prostate abscess, or emphysematous pyelonephritis, and for an alternate non-GU diagnosis, such as cholecystitis or appendicitis.⁴⁴

Management

Antibiotics

All UTIs in older adults must be managed as complicated except for cystitis in a community-dwelling older female with no predisposing factors.^{48,52} Antibiotic choice depends on the location of the infection, kidney function, local antibiogram, and available prior culture results. Simple cystitis requires antibiotics that concentrate well in the urine. Infection of the renal or prostate parenchyma requires a longer course of antibiotics with adequate serum levels. Creatinine clearance must be calculated for patients given renally excreted antibiotics, such as nitrofurantoin and piperacillin–tazobactam. Nitrofurantoin can be given in patients with cystitis and a creatinine clearance of 30 mL/min or greater,¹⁴ despite prior reports recommending its avoidance in patients with creatinine clearance of less than 60 mL/min.⁵³ Fluoroquinolones are the first-line treatment for pyelonephritis and prostatitis in general,^{44,51} but should be avoided if possible in older adults given the high risk of complications.^{14,54} A more appropriate alternative is a third-generation cephalosporin or piperacillin–tazobactam.^{44,51} Trimethoprim–sulfamethoxazole may be used if susceptibility data are known.

Patients with epididymitis who do not require inpatient admission should follow up with a physician within 72 hours.⁵⁵ The treatment of prostatitis is similar to other UTIs with a longer antibiotic course of up to 4 weeks.⁴⁴ A low threshold should be maintained for intravenous antibiotics and admission, especially in patients with predisposing factors, complications, or unreliable follow-up.

Intervention

Obstruction at any level along the urinary tract should be relieved as soon as possible, whether using a Foley catheter, suprapubic catheter, or percutaneous nephrostomy tube. Renal abscesses of more than 3 to 5 cm, perinephric abscesses of more than 3 cm, or any abscess in a hemodynamically unstable patient should be drained, whether percutaneously or surgically, as early as possible.⁵⁶ Patients with emphysematous pyelonephritis may require a nephrectomy in severe cases. Fungus balls associated with candidal UTIs require surgical intervention.⁵⁷

Special Populations

Asymptomatic Bacteriuria

Asymptomatic bacteriuria (ASB) is the presence of 10⁵ or more colony-forming units/mL of one or more species of bacteria in the absence of specific GU signs or symptoms attributable to UTI, irrespective of the presence of pyuria.⁵⁸ Bacteriuria is common in older adults (**Table 7**) and should not be treated because treatment leads to unnecessary antibiotic use with a resulting increased antibiotic resistance,

	Population	Bacteriuria (%)	
Older adults in the community	Female	10.8–16.0	
	Male	3.6–19.0	
Older adults in long-term care facilities	Female	25–50	
	Male	15–50	
Urinary catheter	Intermittent catheterization	1–3	
	Indwelling catheter	Short term (<30 d)	3–5/day catheter
		Long term (≥30 d)	100

Data from: Nicolle LE, Gupta K, Bradley SF, et al. Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America. *Clin Infect Dis*. March 2019; and Tambyah PA, Maki DG. Catheter-associated urinary tract infection is rarely symptomatic. *Arch Intern Med* 2000;160:678–87.

Clostridioides difficile infections, and adverse drug events.^{58,59} Overtreating ASB is common; one-third of so-called UTIs diagnosed and treated in older adults are in fact ASB.⁷ The common practice of treating older adults presenting with a fall or delirium for a UTI in the absence of GU symptoms is not recommended.⁵⁸ Bacteriuric patients who are hemodynamically unstable or febrile without specific GU symptoms should receive broad antibiotic coverage for both urinary and nonurinary source,⁵⁸ because premature closure on the diagnosis of UTI can lead to anchoring bias and missing serious diagnoses. Asymptomatic candiduria should not be treated in non-neutropenic individuals.⁵⁷

Indwelling catheters

ASB in patients with indwelling catheters is common and should not be treated.^{42,45,58} Sampling the urine from indwelling catheters is strongly discouraged. If necessary, specimens must be taken from a newly inserted device.⁴⁵ In patients with a UTI, discontinue the catheter completely if possible. If not, replace the catheter to hasten recovery and prevent recurrence.⁴² Patients with catheter-associated UTIs are more likely to have *Pseudomonas* and *Proteus*. Patients with asymptomatic candiduria should have their indwelling catheters discontinued if possible and require no further treatment.⁵⁷

Sexually transmitted infections

On par with their younger counterparts, UTIs in older adults may be caused by sexually transmitted infections. An assumption of sexual abstinence, monogamy, or heterosexuality in older patients may lead to missed diagnoses, especially given that older adults may not use condoms because pregnancy is not an issue.

FEMALE GENITAL PATHOLOGY

Vulvovaginitis

With advancing age, estrogen and progesterone decrease, resulting in atrophy of the estrogen-responsive tissue, tissue friability, and decreased healing. Vulvar irritation and vaginitis may occur separately or coexist (vulvovaginitis). Atrophic vaginitis, as part of the GU syndrome of menopause, is a common culprit. Exposure to chemical irritants may cause inflammation as well. Bacterial vaginosis may occur given increased vaginal pH in older women. *Candida* is less common, and usually occurs

in the setting of incontinence, poorly controlled diabetes, immunosuppression, or estrogen therapy.⁶⁰ Local treatments may be preferred over systemic for both conditions to decrease polypharmacy.⁶⁰ Desquamation reaction, a self-limiting asymptomatic white discharge, results from replacement of uterine prolapse or estrogen therapy. The discharge has scant white blood cells, is filled with epithelial cells, and does not require treatment.⁶⁰ Sexually transmitted infections should be considered as part of the differential for vulvovaginal complaints. Thick, malodorous discharge may be a sign of endometrial cancer necessitating further outpatient workup.⁶⁰

Vesicovaginal (vagina and bladder) and enterovaginal (vagina and rectum) fistulas should be considered in all older adults reporting vaginal discharge. Fistulae may result from cancer, radiation treatment, or surgery and should be investigated. Patients with a mass in the Bartholin's gland area should be referred to a specialist to rule out cancer and not assumed to be a benign "Bartholin's cyst."⁶⁰

Vaginal Bleeding

Vaginal bleeding in postmenopausal women should be considered a sign of cancer until proven otherwise. Ten percent of cases are caused by endometrial cancer⁶¹ and the rest are mostly caused by endometrial atrophy.⁶² Local or systemic estrogen use can cause vaginal bleeding as well.⁶³ A thorough examination should evaluate for other causes of bleeding, such as vulvar pathology, rectal bleeding, and hematuria. Patients should be examined for signs of trauma and vascular malformations. As with all bleeding complaints, the patient should be assessed for systemic coagulopathy or a bleeding tendency and systemic illness. If the bleeding is not life threatening, the patient can be referred for outpatient ultrasound examination and gynecologic follow-up for a possible hysteroscopy.

Pelvic Organ Prolapse

Pelvic organ prolapse is more common in women above the age of 70.³ Pelvic organ prolapse is usually multifactorial, resulting from pelvic injury (such as pregnancy, delivery, surgery, and radiation) and age-related weakening of connective tissue.¹⁵ Patients may present with symptoms of urinary incontinence, difficulty with voiding and/or defecation, or sexual dysfunction; these patients require referral to a gynecologist for a pessary, pelvic floor muscle training, estrogen therapy, and/or surgery.¹⁵ Measuring a PVR volume assesses for chronic urinary retention that, if present, would require follow-up as well.¹⁵ Patients whose only symptoms are a vaginal bulge and vaginal or pelvic pressure do not require any specific treatment by a specialist.^{15,64}

MALE EXTERNAL GENITAL PATHOLOGY

Infectious and Inflammatory Disorders

Balanitis and balanoposthitis

Balanitis is inflammation of the glans of the penis; balanoposthitis includes inflammation of the foreskin (the glans and the prepuce). These conditions are usually localized processes that rarely present with systemic symptoms and are diagnosed clinically. The most common cause is a candida infection, which can be treated topically with antifungal (azole) creams, although severe cases require oral treatment. Risk factors for the development of balanitis include diabetes, uncircumcised or immunocompromised patients, poor hygiene, use of certain drugs (salicylates, sulfonamides, tetracyclines), and chemical irritants (soap, spermicides, lotion). Older patients with penile skin changes such as discoloration and scarring should be referred for further evaluation for the possibility of carcinoma in situ or squamous cell cancer.⁶⁵

Phimosis and paraphimosis

Phimosis is defined as the inability to retract the foreskin over the glans penis. Although typically nonemergent, it may cause obstructive uropathy requiring a renal ultrasound examination to evaluate for a distended bladder and hydronephrosis.

Paraphimosis is the inability to reduce the retracted foreskin back over the glans penis and is a urologic emergency owing to the concern for necrosis of the glans secondary to arterial compromise and constriction of lymphatic and venous drainage. Urgent reduction is indicated, either manually or surgically. Applying ice to the penis may decrease edema, which will increase the success of reduction.⁶⁶ A gauze soaked with a mixture of 50% dextrose solution and 2% lidocaine jelly, which is then held in place with a condom catheter for 1 hour may decrease edema as well.⁶⁷

Scrotal cellulitis and Fournier's gangrene

Fournier's gangrene, a life-threatening necrotizing emergency that can be deceptively subtle in presentation, presents similarly to scrotal cellulitis with erythema and swelling. Older adults are at increased risk owing to their decreased immunity. High-risk individuals are those with a history of diabetes, malignancy, chronic steroid use, human immunodeficiency virus, or alcohol abuse.⁶⁸ Suspicion for Fournier's gangrene should prompt further imaging with a computed tomography scan, broad-spectrum antibiotics, and emergent surgical consultation for definitive management.⁶⁹

Male Genitourinary Cancer

Male GU cancer is not usually diagnosed in the ED. However, two important scenarios that must be kept in mind are: (1) prostate cancer presenting with back pain owing to spinal metastasis and (2) retroperitoneal space cancer presenting with a varicocele.

Prostate cancer and back pain

Prostate cancer is the most common solid organ cancer found in males in the United States and the cause of 30% of cases of bony metastases of unknown primary site.⁷⁰ Metastases to the spine can result in pathologic fractures and metastatic spinal cord compression, the latter developing in 5.5% of patients with prostate cancer.⁷¹ Older adults with new or worsening low back pain should be evaluated for potential metastases, even in the absence of neurologic deficits.⁷² Any patient with cancer with new back pain should be considered to have spinal metastasis until proven otherwise.^{73,74}

Patients with suspected spinal metastasis should receive an MRI with and without intravenous contrast of the entire spine,⁷⁵ because spinal metastasis will involve multiple sites in up to 38% of patients.⁷⁶ Moreover, sensory deficits and mechanical pain may be present 2 to 4 vertebral levels away from the actual lesion.^{76,77} Noncontrast MRI may be considered if there is low suspicion of epidural or intraspinal disease. If MRI is contraindicated or unavailable then computed tomography imaging may be helpful.

Testicular varicocele and retroperitoneal cancer

A testicular varicocele is an abnormal enlargement of the veins in the pampiniform plexus that affects 15% of men, with incidence increasing with age.⁷⁸ Sudden onset of right sided varicocele in an older adult should prompt further investigation with a computed tomography scan or retroperitoneal ultrasound examination looking for retroperitoneal space pathology, such as renal cell carcinoma.⁷⁸

Trauma

Isolated external GU trauma is relatively uncommon in older adults.⁷⁹ Injuries in older adults usually occur in males after a fall with direct trauma to genitals against furniture, bathroom fixtures, or climbing fixtures (such as stairs or stepstools).⁷⁹ In the setting of

testicular trauma, the physical examination helps to distinguish between a simple testicular contusion and testicular rupture or penetrating injury through the dartos fascia. The latter diagnoses are true urologic emergencies requiring surgical exploration.⁸⁰ The treatment for external GU trauma does not vary by age and injuries limited to the external genitalia are managed on an outpatient basis. A voiding trial before discharge is prudent.

CLINICS CARE POINTS

- ASB is frequently misdiagnosed and treated. A “positive” urinalysis does not mean the patient has a UTI.
- UTIs in geriatric patients are more likely to be complicated and caused by a multidrug-resistant organism. Choose the appropriate antibiotic for a longer course of treatment.
- Emergent differential for urinary incontinence includes UTIs, spinal cord pathology, and delirium.
- Have a high index of suspicion for elder abuse, whether in the form of neglect, physical abuse, or sexual abuse.
- Microscopic hematuria should always be referred for outpatient follow-up.
- A thorough medication list review may provide important clues for the etiology of GU complaints.

DISCLOSURE

The authors have nothing to disclose.

REFERENCES

1. Administration for community living. 2018 Profile of older Americans. 2018. Available at: [https://acl.gov/sites/default/files/Aging and Disability in America/2018OlderAmericansProfile.pdf](https://acl.gov/sites/default/files/Aging_and_Disability_in_America/2018OlderAmericansProfile.pdf). Accessed June 20, 2020.
2. Pines JM, Mullins PM, Cooper JK, et al. National trends in emergency department use, care patterns, and quality of care of older adults in the United States. *J Am Geriatr Soc* 2013;61(1):12–7.
3. Luber KM, Boero S, Choe JY. The demographics of pelvic floor disorders: current observations and future projections. *Am J Obstet Gynecol* 2001;184(7):1496–503.
4. Jacobsen SJ, Jacobson DJ, Girman CJ, et al. Natural history of prostatism: risk factors for acute urinary retention. *J Urol* 1997;158(2):481–7.
5. Liang SY. Sepsis and Other Infectious Disease Emergencies in the Elderly. *Emerg Med Clin North Am* 2016;34(3):501–22.
6. ACOG Practice Bulletin No. 155: urinary incontinence in women. *Obstet Gynecol* 2015;126(5):e66–81.
7. Woodford HJ, George J. Diagnosis and management of urinary tract infection in hospitalized older people. *J Am Geriatr Soc* 2009;57(1):107–14.
8. American Geriatrics Society Ethics Committee. American Geriatrics Society care of lesbian, gay, bisexual, and transgender older adults position statement. *J Am Geriatr Soc* 2015;63(3):423–6.
9. American Geriatrics Society. In: Harper GM, Lyons WL, Potter JF, editors. Geriatric review syllabus (GRS): a core curriculum in geriatric medicine. 10th edition. American Geriatrics Society; 2009.

10. Wilson MMG. Sexually transmitted diseases. *Clin Geriatr Med* 2003;19(3):637–55.
11. When Health Care Isn't Caring. Legal's Survey of Discrimination against LGBT People and People Living with HIV. New York, NY, . Lambda. Available at: www.lambdalegal.org/health-care-report.
12. Jörgensen T, Johansson S, Kennerfalk A, et al. Prescription drug use, diagnoses, and healthcare utilization among the elderly. *Ann Pharmacother* 2001;35(9):1004–9.
13. American College of Emergency Physicians; American Geriatrics Society. Emergency Nurses Association; Society for Academic Emergency Medicine; Geriatric Emergency Department Guidelines Task Force. Geriatric emergency department guidelines. *Ann Emerg Med* 2014;63(5):e7–25.
14. American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. *J Am Geriatr Soc* 2019;67(4):674–94.
15. Bales G, Chung D, Ballert K. Pelvic organ prolapse in older adults. In: Griebing TL, editor. *Geriatric urology*. New York: Springer New York; 2014. p. 181–206.
16. Thorne MB, Geraci SA. Acute urinary retention in elderly men. *Am J Med* 2009;122(9):815–9.
17. Wiggins J, Patel SR. Changes in kidney function. *Hazzards Geriatr Med Gerontol* 2009;6(8):10–3.
18. Selby NM, Kolhe NV, McIntyre CW, et al. Defining the cause of death in hospitalised patients with acute kidney injury. *PLoS One* 2012;7(11):1–7.
19. Anderson S, Eldadah B, Halter JB, et al. Acute kidney injury in older adults. *J Am Soc Nephrol* 2011;22(1):28–38.
20. Nagaratnam N, Nagaratnam K, Cheuk G. *Geriatric diseases: evaluation and management*. Cham (Switzerland): Springer; 2018.
21. Gaibi T, Ghatak-Roy A. Approach to acute kidney injuries in the emergency department. *Emerg Med Clin North Am* 2019;37(4):661–77.
22. Raman M, Middleton RJ, Kalra PA, et al. Estimating renal function in old people: an in-depth review. *Int Urol Nephrol* 2017;49(11):1979–88.
23. Del Vecchio L, Locatelli F. Ethical Issues in the elderly with renal disease. *Clin Geriatr Med* 2009;25(3):543–53.
24. Willis GC, Tewelde SZ. The approach to the patient with hematuria. *Emerg Med Clin North Am* 2019;37(4):755–69.
25. AUA Guideline on Management of Benign Prostatic Hyperplasia (2003). Chapter 1: diagnosis and treatment recommendations. *J Urol* 2003;170(2):530–47.
26. Gonzalez AN, Lipsky MJ, Li G, et al. The prevalence of bladder cancer during cystoscopy for asymptomatic microscopic hematuria. *Urology* 2019;126:34–8.
27. Kaplan SA, Wein AJ, Staskin DR, et al. Urinary retention and post-void residual urine in men: separating truth from tradition. *J Urol* 2008;180(1):47–54.
28. Marshall JR, Haber J, Josephson EB. An evidence-based approach to emergency department management of acute urinary retention. *Emerg Med Pract* 2014;16(1):1–20 [quiz: 21].
29. Klarskov P, Andersen JT, Asmussen CF, et al. Acute urinary retention in women: a prospective study of 18 consecutive cases. *Scand J Urol Nephrol* 1987;21(1):29–31.
30. Malik RD, Cohn JA, Bales GT. Urinary retention in elderly women: diagnosis & management. *Curr Urol Rep* 2014;15(11):454.

31. Boettcher S, Brandt AS, Roth S, et al. Urinary retention: benefit of gradual bladder decompression - myth or truth? A randomized controlled trial. *Urol Int* 2013;91(2): 140–4.
32. Etafy MH, Saleh FH, Ortiz-Vanderdys C, et al. Rapid versus gradual bladder decompression in acute urinary retention. *Urol Ann* 2017;9(4):339–42.
33. Fisher E, Subramonian K, Omar MI. The role of alpha blockers prior to removal of urethral catheter for acute urinary retention in men. *Cochrane Database Syst Rev* 2014;2014(6):CD006744.
34. Nitti VW. Is there a role for alpha-blockers for the treatment of voiding dysfunction unrelated to benign prostatic hyperplasia? *Rev Urol* 2005;7(Suppl 4):S49–55.
35. Taylor JA, Kuchel GA. Detrusor underactivity: clinical features and pathogenesis of an underdiagnosed geriatric condition. *J Am Geriatr Soc* 2006;54(12): 1920–32.
36. Adelman PK. Prevalence and detection of urinary incontinence among older Medicaid recipients. *J Health Care Poor Underserved* 2004;15(1):99–112.
37. Lukacz ES, Santiago-Lastra Y, Albo ME, et al. Urinary incontinence in women: a review. *JAMA* 2017;318(16):1592–604.
38. Resnick NM. Initial evaluation of the incontinent patient. *J Am Geriatr Soc* 1990; 38(3):311–6.
39. Roberts JA. Management of pyelonephritis and upper urinary tract infections. *Urol Clin North Am* 1999;26(4):753–63.
40. Caterino JM. Evaluation and management of geriatric infections in the emergency department. *Emerg Med Clin North Am* 2008;26(2):319–43.
41. Loeb M, Bentley DW, Bradley S, et al. Development of minimum criteria for the initiation of antibiotics in residents of long-term-care facilities: results of a consensus conference. *Infect Control Hosp Epidemiol* 2001;22(2):120–4.
42. Hooton TM, Bradley SF, Cardenas DD, et al. Diagnosis, Prevention, and Treatment of Catheter-Associated Urinary Tract Infection in Adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. *Clin Infect Dis* 2010;50(5):625–63.
43. Huang JJ, Tseng CC. Emphysematous pyelonephritis: clinicoradiological classification, management, prognosis, and pathogenesis. *Arch Intern Med* 2000; 160(6):797–805.
44. Lipsky BA, Byren I, Hoey CT. Treatment of bacterial prostatitis. *Clin Infect Dis* 2010;50(12):1641–52.
45. Miller JM, Binnicker MJ, Campbell S, et al. A guide to utilization of the microbiology laboratory for diagnosis of infectious diseases: 2018 update by the Infectious Diseases Society of America and the American Society for Microbiology. *Clin Infect Dis* 2018;67(6):e1–94.
46. Nickel JC. Recommendations for the evaluation of patients with prostatitis. *World J Urol* 2003;21(2):75–81.
47. Azmat CE, Vaitla P. Orchitis. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; November 4, 2020.
48. Beveridge LA, Beveridge LA, Davey PG, et al. Optimal management of urinary tract infections in older people. *Clin Interv Aging* 2011;6:173–80.
49. Cortes-Penfield NW, Trautner BW, Jump RLP. Urinary tract infection and asymptomatic bacteriuria in older adults. *Infect Dis Clin North Am* 2017;31(4):673–88.
50. Sundvall P-D, Gunnarsson RK. Evaluation of dipstick analysis among elderly residents to detect bacteriuria: a cross-sectional study in 32 nursing homes. *BMC Geriatr* 2009;9(1):32.

51. Gupta K, Hooton TM, Naber KG, et al. International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: a 2010 update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. *Clin Infect Dis* 2011;52(5): e103–20.
52. Nicolle LE. Urinary tract infections in the elderly. *Clin Geriatr Med* 2009;25(3): 423–36.
53. American Geriatrics Society updated beers criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2012;60(4):616–31.
54. Stahlmann R, Lode H. Safety considerations of fluoroquinolones in the elderly: an update. *Drugs Aging* 2010;27(3):193–209.
55. Epididymitis - 2015 STD treatment guidelines. Centers for Disease Control and Prevention; 2015. Available at: <https://www.cdc.gov/std/tg2015/epididymitis.htm>. Accessed July 23, 2020.
56. Dubbs SB, Sommerkamp SK. Evaluation and management of urinary tract infection in the emergency department. *Emerg Med Clin North Am* 2019;37(4):707–23.
57. Pappas PG, Kauffman CA, Andes DR, et al. Clinical Practice Guideline for the Management of Candidiasis: 2016 Update by the Infectious Diseases Society of America. *Clin Infect Dis* 2015;62(4):e1–50.
58. Nicolle LE, Gupta K, Bradley SF, et al. Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America. *Clin Infect Dis* 2019;68(10):e83–110.
59. American Geriatrics Society Identifies Five Things That Healthcare Providers and Patients Should Question. *J Am Geriatr Soc* 2013;61(4):622–31.
60. Miller KL, Griebing TL. Gynecologic disorders. In: Halter JB, Ouslander JG, Studenski S, et al, editors. *Hazzard's geriatric medicine and gerontology*. 7th edition. New York: McGraw-Hill; 2017; p. 629–46.
61. Karlsson B, Granberg S, Hellberg P, et al. Comparative study of transvaginal sonography and hysteroscopy for the detection of pathologic endometrial lesions in women with postmenopausal bleeding. *J Ultrasound Med* 1994;13(10):757–62.
62. Reinhold C, Khalili I. Postmenopausal bleeding: value of imaging. *Radiol Clin North Am* 2002;40(3):527–62.
63. Krause M, Wheeler TL 2nd, Snyder TE, et al. Local effects of vaginally administered estrogen therapy: a review. *J Pelvic Med Surg* 2009;15(3):105–14.
64. Pelvic Organ Prolapse. *Obstet Gynecol* 2019;134(5):e126–42.
65. Buechner SA. Common skin disorders of the penis. *BJU Int* 2002;90(5):498–506.
66. Jones MP, Mekuria K. Genitourinary Procedures. *Emerg Med Clin North Am* 2019; 37(4):811–9.
67. Fu J, Watts M, Coralic Z. Trick of the trade: paraphimosis - pour some sugar on me. *ALiEM Academic Life in Emergency Medicine*. Available at: <https://www.aliem.com/trick-trade-management-paraphimosis/>.
68. Yilmazlar T, Işık Ö, Öztürk E, et al. Fournier's gangrene: review of 120 patients and predictors of mortality. *Turkish J Trauma Emerg Surg* 2014;20(5):333–7.
69. Levenson RB, Singh AK, Novelline RA. Fournier gangrene: role of imaging. *Radiographics* 2008;28(2):519–28.
70. Cross W, Prescott S. The prostate. In: Fillit H, Rockwood K, Young JB. *Brocklehurst's textbook of geriatric medicine and gerontology*. 2010. Amsterdam, Netherlands: Elsevier; p. 689–701.
71. Mak KS, Lee LK, Mak RH, et al. Incidence and treatment patterns in hospitalizations for malignant spinal cord compression in the United States, 1998–2006. *Int J Radiat Oncol Biol Phys* 2011;80(3):824–31.

72. Loblaw DA, Perry J, Chambers A, et al. Systematic review of the diagnosis and management of malignant extradural spinal cord compression: the Cancer Care Ontario Practice Guidelines initiative 's neuro-oncology disease site group. *J Clin Oncol* 2020;23(9):2028–37.
73. Helweg-Larsen S, Laursen H. Clinical and autopsy findings in spinal cord compression due to metastatic disease. *Eur J Neurol* 1998;5:587–92.
74. Viets-upchurch J, Silvestre J, Rice TW, et al. Metastatic spinal cord compression: a review. *Emergency Medicine*. 2014 January;46(1):10
75. Patel ND, Broderick DF, Burns J, et al. ACR Appropriateness Criteria Low Back Pain. *J Am Coll Radiol* 2016;13(9):1069–78.
76. Lu C, Gonzalez RG, Jolesz FA, et al. Suspected spinal cord compression in cancer patients: a multidisciplinary risk assessment. *J Support Oncol* 2005;3(4): 305–12.
77. Wong D, Fornasier V, MacNab I. Spinal metastases: the obvious, the occult, and the impostors. *Spine (Phila Pa 1976)* 1990;15:1–4.
78. Beddy P, Geoghegan T, Browne RF, et al. Testicular varicoceles. *Clin Radiol* 2005; 60(12):1248–55.
79. Bagga HS, Tasian GE, Fisher PB, et al. Product related adult genitourinary injuries treated at emergency departments in the United States from 2002 to 2010. *J Urol* 2013;189(4):1362–8.
80. Bourke MM, Silverberg JZ. Acute Scrotal Emergencies. *Emerg Med Clin North Am* 2019;37(4):593–610.