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ELDER CARE

A Resource for Interprofessional Providers

Nocturia in Older Adults

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Nocturia, defined as voiding at least twice per night that interrupts sleep, is a common complaint in older adults. The prevalence among those 70 years and older is reported to be 69-93% in men and about 75% in women. Because it is so common, clinicians often dismiss nocturia as a normal consequence of aging and provide limited advice on how to deal with it.

The effects of nocturia on quality of life, however, can be profound. It can affect personal relationships due to lack of sleep and associated fatigue. Nocturia can alter self-age concept ("It makes me feel old"), and can lead to depression. Nocturia can also be dangerous, as falls may occur during nighttime awakenings and result in hip fractures or even death. Nighttime awakenings associated with nocturia can affect the sleep of family members and bed partners. It is not surprising, therefore, that nocturia is cited among the reasons why older adults are admitted to care homes.

The cause of nocturia in older adults is factorial. Age-related changes in the urinary system, along with a variety of hormonal changes (Table 1) contribute to nocturia. In addition, medical conditions and medications can increase urine production or predispose to nighttime awakenings and thus increase the risk of nocturia (Table 2). Psychological conditions (e.g., depression, family stress) may also contribute to nighttime awakenings.

Table 1.
Some Factors That Contribute to Nocturia in Older Adults

Age-associated changes	Decreased ability to postpone urination
	Decreased bladder compliance
	Decreased functional bladder capacity
	Decreased maximum urinary flow rate
	Detrusor overactivity
	Increased post-void residual volume
Increased urine production at night	Increased nocturnal catecholamine levels
	Increased nocturnal natriuretic peptide levels
	Increased nocturnal sodium excretion
	Decreased nocturnal antidiuretic hormone levels

Table 2. Conditions and Medications Associated with Nocturia

Medical Conditions	Diabetes mellitus
	Heart failure
	Hypertension
	Obesity
	Obstructive sleep apnea
	Prostate enlargement/ Prostate cancer
	Recurrent cystitis/ Neurogenic voiding dysfunction
	Restless leg syndrome
	Spinal stenosis
	Hypoalbuminemia
	Bladder cancer
	Depression
Medications	Antihistamines
	Beta blockers
	Calcium channel blockers
	Cholinesterase inhibitors
	Diuretics taken in the evening
	Selective serotonin-reuptake inhibitors
	Statins

Evaluation

History and physical are aimed at identifying medical conditions and medications that predispose to nocturia (Table 2) and which, if treated, may lead to resolution of the problem. Check renal function, urinalysis, serum glucose, and post-void residual urine volume. Ask about patterns of fluid

TIPS FOR DEALING WITH NOCTURIA

- Don't underestimate the importance of nocturia. It can have a major effect on quality of life for patients and their families, and nighttime bathroom use poses a risk of falls.
- When evaluating a patient with nocturia, ask about medical conditions that might be contributing (Table 2) because treating those conditions may lessen nocturia, as well as asking about personal or family stress resulting from nocturia.
- For patients with lower urinary tract symptoms attributable to prostate enlargement or other urologic or gynecologic abnormalities contributing to nocturia, treat those conditions or refer to specialty care for treatment.

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intake and the presence of other urinary complaints. A voiding diary can help characterize typical daily timing and volume of voids, episodes of incontinence, and the frequency and volume of fluid intake. Treatment (Table 3) can then be initiated and the diary can serve as a baseline.

Non-Pharmacologic Treatment

Avoidance of nighttime fluid intake, including alcohol and caffeine, may have benefit, as may voiding before bed. The use of compression stockings and afternoon leg elevation can decrease fluid retention and result in less nighttime urination. Moderate daytime exercise, reducing non-sleep time spent in bed, and keeping a warm bed to decrease cold-induced diuresis have all been shown to improve sleep quality. These approaches to treatment are rarely effective alone, however, and medications are frequently needed.

Pharmacotherapy

For patients with nocturia related to prostate hyperplasia, alpha blockers and 5-alpha reductase inhibitors may be helpful. Persistent symptoms may warrant urology referral.

For those with nocturia related to overactive bladder (i.e., urgency with a decreased ability to store urine), anti-muscarinic agents such as darifenacin, oxybutynin, tolterodine, trospium, and solifenacin can be effective, but should be used with caution in older adults due to their anticholinergic side effects. Beta-3-agonists such as mirabegron or vibegron increase bladder capacity by relaxing bladder smooth muscle. Though they do not have anticholinergic side effects, the most common side effect is hypertension.

Desmopressin nasal spray (Noctiva) is FDA approved for treating nocturnal polyuria in adults who awaken at least 2 times/night to urinate. However, this drug can cause severe hyponatremia, resulting in an FDA Black Box Warning. The 2019 American Geriatric Society's Beers list gives a strong recommendation against prescribing this medication to older adults. It is also contraindicated in patients taking loop diuretics or glucocorticoids, and with glomerular filtration rates <50 ml/min.

Diuretics such as hydrochlorothiazide can be useful to shift the diuresis from nighttime to daytime. They are a good choice for patients who have concomitant hypertension. When used to treat nocturia, the diuretic should be taken at least 8 hours before bedtime to prevent urine accumulation in the bladder before the early sleeping hours.

Other approaches to treating overactive bladder include injecting botulinum toxin into the detrusor muscle via cystoscope (successful in selected patients) and posterior tibial nerve stimulation (reduces nocturia episodes by 25%). These interventions may be appropriate for patients who are not responsive to other treatments.

Table 3. Approach to Treatment of Nocturia

General Approach	Non-Pharmacologic	Pharmacologic
• Address underlying medical problems • Keep a voiding diary • Check for medications that contribute to nocturia • Refer to specialist (urologist for prostate hyperplasia, sleep specialist for obstructive sleep apnea, etc.) as needed	• Avoid caffeine and alcohol • Afternoon leg elevation • Avoid nighttime fluid intake • Compression stockings • Moderate exercise • Pelvic floor exercises (Kegel) • Posterior tibial nerve stimulation • Reduce non-sleep time in bed • Warm bed • Weight loss • Adjust timing of medication; e.g diuretics	• Alpha blockers and 5-alpha reductase inhibitors for prostate hyperplasia • Anti-muscarinics or beta– 3 agonists for overactive bladder • Botulinum toxin in selected refractory cases • Desmopressin (see text) • Diuretics • Vaginal estrogens

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