



October 2012 (updated May 2015)

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A program of the Hartford
Geriatric Nursing Initiative

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 multi-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 and 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 Obstructive sleep apnea Prostate enlargement Recurrent cystitis Spinal stenosis
Medications	Antihistamines Beta blockers Calcium channel blockers Cholinesterase inhibitors Diuretics taken in the evening

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 abnormality contributing to nocturia, treat those conditions or refer to specialty care for treatment.
- Recommend both pharmacologic and non-pharmacologic approaches to treatment. If there are no medical conditions to treat and if not contraindicated by cirrhosis, renal failure, or heart failure, desmopressin is often a good first choice.

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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, and post-void residual urine volume. Ask about patterns of fluid 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. Their anticholinergic side effects, however, are often a problem for older adults and they should be used with caution. Indeed, the Beers criteria state that these drugs should be avoided in older adults whenever possible.

Desmopressin is an effective treatment for nocturia and should be considered as a first-line agent for many patients. A low dose (0.1 mg-0.4 mg) can be given at bedtime and response to treatment assessed. Desmopressin can cause fluid retention and hyponatremia and requires careful fluid intake and restrictions. It is contraindicated for patients with hepatic cirrhosis, renal impairment (CrCl <50ml/min), and heart failure.

Diuretics such as hydrochlorothiazide can be useful for patients who cannot tolerate desmopressin. They are also 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; it will prevent water accumulation before the early sleeping hours.

Injection of botulinum toxin into the detrusor muscle via cystoscope has been successful in selected patients with detrusor overactivity and non-responsive to other treatments.

General Approach	Non-Pharmacologic	Pharmacologic
<ul style="list-style-type: none"> • Address underlying medical problems • Check for medication that contribute to nocturia • Refer to specialist (urologist for prostate hyperplasia, sleep specialist for obstructive sleep apnea, etc.) 	<ul style="list-style-type: none"> • Afternoon leg elevation • Avoid nighttime fluid intake • Compression stockings • Moderate exercise • Reduce non-sleep time in bed • Warm bed 	<ul style="list-style-type: none"> • Alpha blockers and 5-alpha reductase inhibitors for prostate hyperplasia • Anti-muscarinics for overactive bladder • Desmopressin • Diuretics • Botulinum toxin in selected refractory cases

References and Resources

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Tables adapted from Varilla et al.

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Supported by: Donald W. Reynolds Foundation, Arizona Geriatric Education Center and Arizona Center on Aging

This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number UB4HP19047, Arizona Geriatric Education Center. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.