

Nocturia

Nature's Nighttime Call

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Nocturia has been defined in many different ways, making its identification and treatment confusing. In 2002, the International Continence Society (ICS) standardized the definition of nocturia as, “the complaint that the individual has to wake at night one or more times to void.”¹ When questioning patients, it is important to keep this new definition in mind, so as to standardize diagnosis and therapy.

What is the prevalence of nocturia?

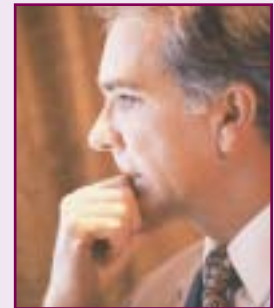
Physicians can expect the prevalence of nocturia to increase now that the definition involves waking a minimum of one time to void. Table 1 lists the prevalence of the condition using the previous definition of two or more nighttime voids.²

How does nocturia impact quality of life?

In all genitourinary conditions, physicians assess “bother” to ascertain whether therapy is warranted. Nocturia research has found that two-thirds of all men and women with nocturia consider it bothersome.^{3,4} The impact of nocturia is great, given that rising to void disturbs sleep. Sleep deprivation negatively impacts work performance and mood.

Kal's case

- Kal, 57, complains of waking to void four or five times per night.
- He does not have daytime frequency or urgency.
- He reports having a good stream and no hematuria.
- He finds he is tired during the day and often falls asleep at his desk in the afternoon.
- He has no significant medical history and takes only multivitamins.
- Physical exam is unremarkable; specifically, results show a normal rectal exam and no peripheral edema.
- A urinalysis is negative for blood, glucose and protein.
- A 24-hour voiding diary shows urine volume of 1 L while awake and 1.5 L during the night.



What would you do for Kal? For a followup, go to page 74.

Asplund *et al.* studied women aged 40 to 60 and found a relationship between nighttime voids and days off work. Those without nocturia missed 15 work days/year; however, those who had risen to void one or two times missed > 30 days/year. This study highlights the financial burden of nocturia to patients and employers.⁵

Table 1

Prevalence of nocturia using previous definition*

Gender	Age			
	40-49	50-59	60-69	over 70
Male	16%	29%	42%	55%
Female	40-59	60-79	over 80	
	13%	28%	51%	

*The previous definition of nocturia was ≥ 2 nighttime voids.

In addition to an effect on the workforce, the increase in falls and fractures in the elderly has been correlated with the number of nightly mic-turitions.⁶

What is the differential diagnosis?

The differential diagnosis of nocturia is vast. Table 2 lists the most common etiologies.

Polyuria

Polyuria and nocturnal polyuria often have different etiologies since polyuria refers to excessive urine production during a 24-hour period, while nocturnal polyuria is urine overproduction during the night.

Sleep disorders

Disorders of sleep are notorious for causing night-time voiding. It is important to question whether patients “wake to void” or “void because they are

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A followup on Kal

- Initial management includes fluid restriction in the evening; however, his symptoms persist.
- Desmopressin, 0.1 mg, at bedtime is started and after one week, Kal's serum sodium is normal. However, he still finds he has nocturia three times per night.
- A dose elevation to 0.2 mg relieves his symptoms. His sodium is normal and he is not bothered by side-effects.

awake.” This difference will help define if they suffer from poor sleep patterns and could benefit from management of insomnia, “restless leg” syndrome or other parasomnias.⁵

Benign prostatic hypertrophy

In the aging male, benign prostatic enlargement is the most commonly believed cause of nocturia. The nighttime voiding may be due to an elevated postvoid residual, resulting in a decreased functional bladder capacity. It may also be due to detrusor overactivity secondary to the pathologic changes of outlet obstruction. However, many other bladder storage conditions can result in nocturia in men and women (Table 3). By isolating the cause, effective medical and surgical therapies can be better directed at these urologic conditions.

How is nocturia diagnosed?

The workup of nocturia starts with the history. Patients may not report nocturia, therefore, physicians should routinely ask patients about it as a screen for other serious medical conditions. Often, nocturia is not an isolated genitourinary complaint.

A good history will ask about prior lower urinary tract surgery, hematuria and irritative symp-

Table 2

Etiologies of nocturia

Polyuria	Sleep disorders	Bladder storage problems	Nocturnal polyuria
Diabetes mellitus Diabetes insipidus Primary polydipsia	Insomnia Parasomnias Restless leg syndrome Sleep apnea Other sleep disorders	Elevated PVR Detrusor overactivity Bladder outlet obstruction Bladder hypersensitivity Urogenital aging	Water diuresis Primary Secondary Solute/water diuresis CHF Renal insufficiency Sleep apnea Estrogen deficiency

PVR: Postvoiding residual
CHF: Congestive heart failure

Table 3

Bladder storage conditions that can result in nocturia

- Overactive bladder
- Urinary tract infections
- Urethral stricture disease
- Interstitial cystitis

diary by the patient, which records the number of voids, the volumes ingested and the volumes voided. This useful instrument is seldom used, but may quickly elucidate the etiology and guide therapy.

Finally, a urinalysis may identify glucosuria, hematuria, or evidence of cystitis.

Referral to a specialist may be required for many conditions that cause nocturia.

toms. In addition, obstructive symptoms (*e.g.*, poor emptying, hesitancy, decreased stream and dribbling) may define the problem.

Sleep habits and patterns should also be questioned, since it is important to differentiate nighttime waking followed by voiding from waking due to a need to void.

The history should also focus on general medical symptoms that might suggest a cardiac, respiratory, psychiatric or diabetic cause of nocturia. Excessive fluid intake, use of diuretics and alcohol/caffeine consumption should also be detailed.

A general exam may identify clues, such as peripheral edema, obesity, shortness of breath or prostatic enlargement. However, the most informative diagnostic tool is a 24- or 72-hour voiding

What is the treatment?

Patient management of nocturia includes behavioural modification and pharmacologic interventions.

Initial therapy should be directed to optimize any underlying conditions. Behavioural changes include decreasing caffeine and alcohol consumption, as well as limiting all fluids after dinner.

One caveat is that patients with congestive heart failure (CHF) or venous insufficiency will need more aggressive edema prevention strategies, such as compression stockings, afternoon naps with elevation of legs and appropriate diuretic

ic timing. Late-afternoon or early-evening diuresis is optimal, since the patient will then recline shortly after excess fluid has been voided.

Pharmacologic strategies include the appropriate timing of diuretics, the use of nighttime anticholinergics or alpha blockers and desmopressin.

Anticholinergics play a central role in the management of overactive bladder, but patients must be warned about dry mouth and constipation. Anticholinergics may also occasionally cause confusion in the elderly.

Alpha blockers are well-established in improving both subjective and objective measures of lower urinary tract symptoms of benign prostatic hypertrophy.

Desmopressin is a potent antidiuretic. It is indicated in patients who have nocturnal polyuria or persistent nocturia despite optimization of medical conditions. Its use should be restricted to those without liver disease, CHF, chronic renal insufficiency, salt-losing conditions and platelet disorders. It should be prescribed starting at 0.1 mg orally at bedtime, increased to 0.2 mg (as necessary) and finally to 0.4 mg at weekly intervals.

In patients older than 65 years or at risk of hyponatremia, serum sodium should be measured prior to and three days after any dosage change.

Reported side-effects include:

- headache,
- diarrhea,
- dizziness and
- nausea.

If adverse effects occur, serum sodium should be checked and the medication stopped until the result is available. Studies show that 33% of patients respond to 0.2 mg, while 55% require 0.4mg.⁷ In a specific study of male patients, 54% experienced a $\geq 40\%$ reduction in night voids compared to just 16% of placebo patients.⁸

Take-home message



What is nocturia?

- The new definition of nocturia is a complaint of waking to void one or more times during the night.

What is the differential diagnosis?

- Differential diagnosis includes: sleep disorders, bladder storage problems and nocturnal polyuria.

What is the treatment?

- Management includes behaviour changes (*e.g.*, reducing fluid intake at night), and pharmacologic therapy with alpha blockers or anticholinergics and desmopressin. You may also alter timing of diuretics.

Newer medications, such as tamsulosin, can minimize the concerning side-effect of postural hypotension, but abnormal ejaculation may occur. Patients need to be instructed on the appropriate use and timing of these medications to maximize their potential. **Dx**

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