Νυκτουρία: πότε είναι λειτουργική διαταραχή και πότε νόσος;

Μάρκος Καραβιτάκης MD, MSc (Imperial College), PhD, FEBU

Χειρουργός Ουρολόγος Ανδρολόγος

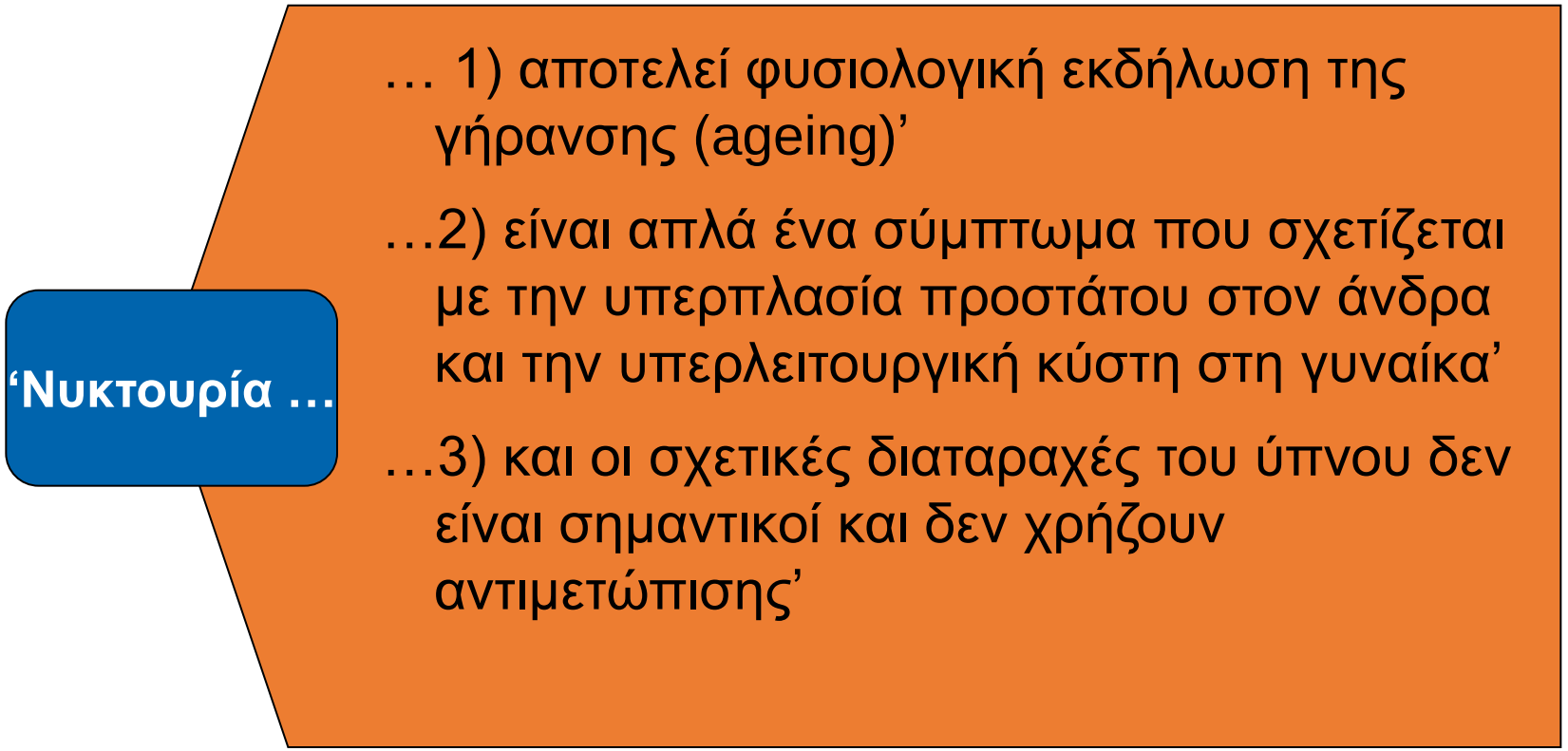
Associate Member European Association of Urology Guidelines Office

ΑΘΗΝΑΪΚΗ MEDICLINIC
ΓΕΝΙΚΗ ΚΛΙΝΙΚΗ

European Association of Urology

ΟΜΙΛΟΣ ΙΑΤΡΙΚΟΥ ΑΘΗΝΩΝ

Μύθοι σχετικά με την νυκτουρία….



ΟΡΙΣΜΟΣ

International Continence Society

νυκτουρία ορίζεται η ενόχληση (complain) που ένα άτομο πρέπει να σηκωθεί μια ή περισσότερες φορές τη νύχτα για να ουρήσει

van Kerrebroeck PNeurourol. Urodyn. 2002; 21: 179–83

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Voiding Dysfunction

Nocturia Frequency, Bother, and Quality of Life: How Often Is Too Often? A Population-Based Study in Finland

Kari A.O. Tikkinen[a,b,c,d,*], *Theodore M. Johnson II*[e,f], *Teuvo L.J. Tammela*[c,d], *Harri Sintonen*[g,h], *Jari Haukka*[i,j], *Heini Huhtala*[j], *Anssi Auvinen*[j]

Table 2 – Age-standardised proportions for degree of bother by frequency of nocturia in both sexes*

Frequency of nocturia (voids per night)	Degree of bother from nocturia			
	None	Small	Moderate	Major
One, %	52.2	41.1	5.9	0.7
Two, %	29.3	53.8	13.9	3.1
Three, %	17.4	26.7	41.9	14.0
Four or more, %	11.3	7.0	46.0	35.7

* Age standardisation was performed using the age structure of Finland at the beginning of 2004.

Tikkinen et al. Eur Urol 57(3) 488-496, 2010

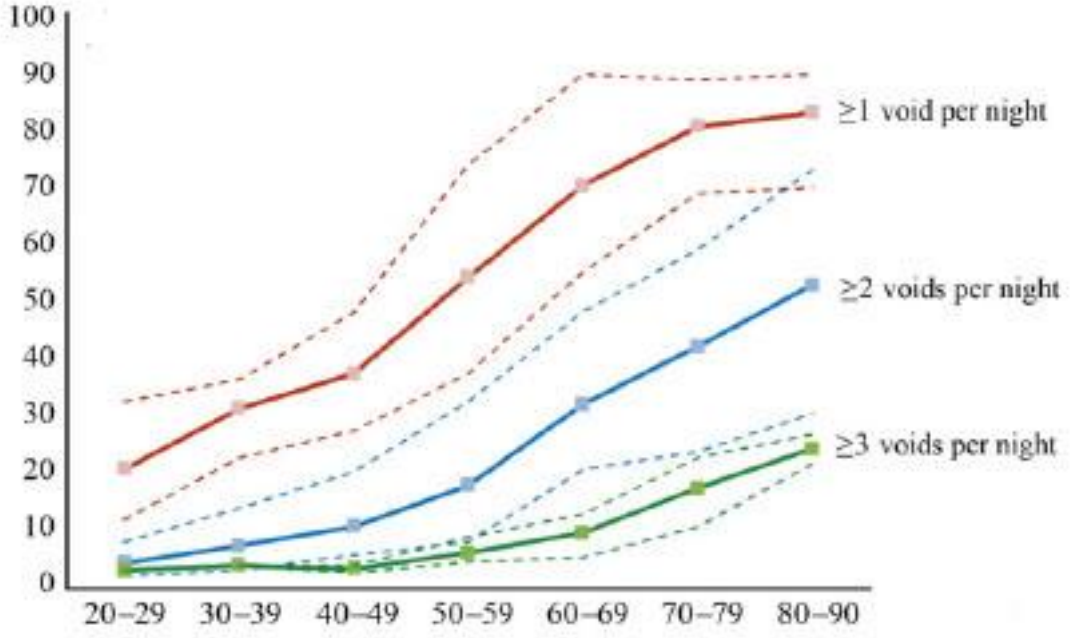
Neurourology and Urodynamics 35:283–287 (2016)

Would a New Definition and Classification of Nocturia and Nocturnal Polyuria Improve Our Management of Patients? ICI-RS 2014

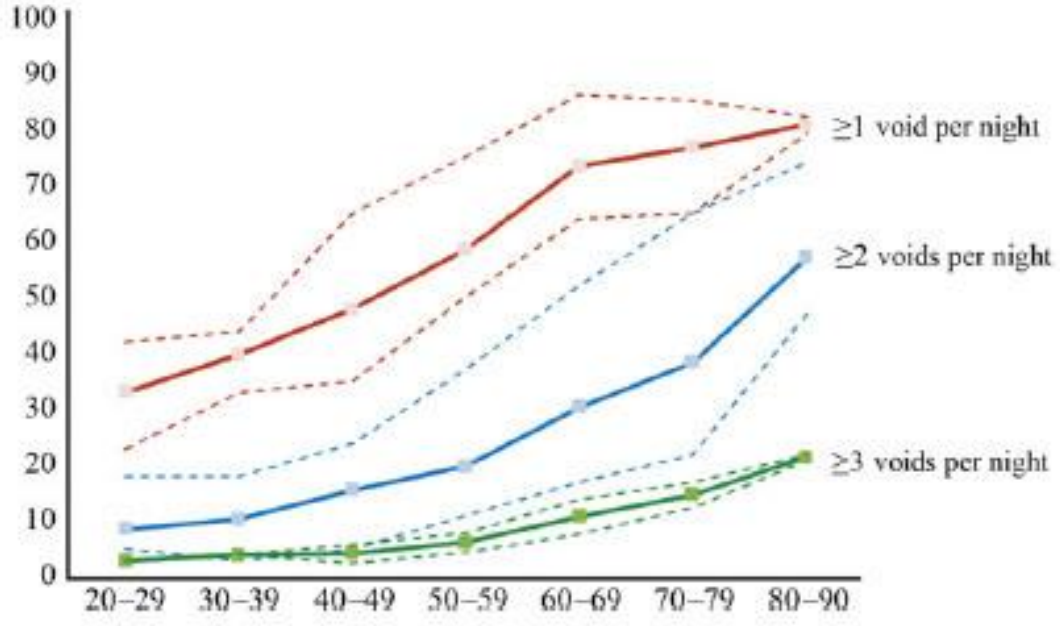
J.L.H.Ruud Bosch,[1*] Karel Everaert,[2] Jeffrey P. Weiss,[3] Hashim Hashim,[4] M.Sajjad Rahnama'i,[5] An-Sofie Goessaert,[6] and Joshua Aizen[7]

"..clarification in the definition of nocturia could be to define nocturia as a **symptom** that may or may not be bothersome (i.e a complaint, sometimes a chief complaint among other lower urinary tract symptoms)….recent research suggest that severe nocturia is associated with increased mortality risk… hence careful history and physical examination should be done in cases of bothersome or no bothersome severe nocturia…."

ΕΠΙΠΟΛΑΣΜΟΣ ΝΥΚΤΟΥΡΙΑΣ



Άνδρες ηλικίας 20–40 ετών: 2–17%
Γυναίκες ηλικίας 20–40 ετών: 4–18%



Άνδρες ηλικίας> 70 ετών: 29–59%
Γυναίκες ηλικίας > 70 ετών : 28–62%

Cornu JN Eur Urol 62 : 877, 2012

ΜΗ ΑΝΑΦΕΡΟΜΕΝΗ ΝΥΚΤΟΥΡΙΑ

Λόγοι μη αναφερόμενης νυκτουρίας (n=285)

Απαντήσεις	**Νυκτουρία <3 n=262 (%)**	**Νυκτουρία ≥3 n=23 (%)**	**p value**
Νυκτουρία φυσιολογικό κομμάτι της γήρανσης	60.7	47.8	0.27
Πολύ μικρή για να αξίζει να ασχοληθεί	66.4	13.0	<0.001
Άγνοια ότι η νυκτουρία μπορεί να αντιμετωπισθεί	31.3	47.8	0.11
Έλλειψη χρόνου	7.0	8.7	0.67
Αίσθημα ντροπή	5.0	4.3	1.00
Θεραπεία κοστίζει ακριβά	2.7	4.3	0.50

Chen et al. *Int Urogynecol J Pelvic Floor Dysfunct* 2007;18:431–436

International Journal of Urology (2009) 16, 249–256 doi: 10.1111/j.1442-2042.2008.02246.x

Review Article

Nocturia: A non-specific but important symptom of urological disease

Tim Schneider,[1] Jean JMCH de la Rosette[2] and Martin C Michel[3]

[1]Praxisklinik Rhein-Ruhr, Mülheim, Germany, [2]Department of Urology and [3]Department of Pharmacology and Pharmacotherapy, Academic Medical Center, Amsterdam, The Netherlands

Nocturia or nocturnal micturition is a widespread phenomenon. Given the high prevalence of nocturia among the elderly, it is often considered to be a normal part of ageing. However, there is no reason why a healthy elderly person should suffer from nocturia. Rather, nocturia can result from a broad range of urological and non-urological conditions, and in any given individual multiple such conditions may coexist.[1] The Inter-

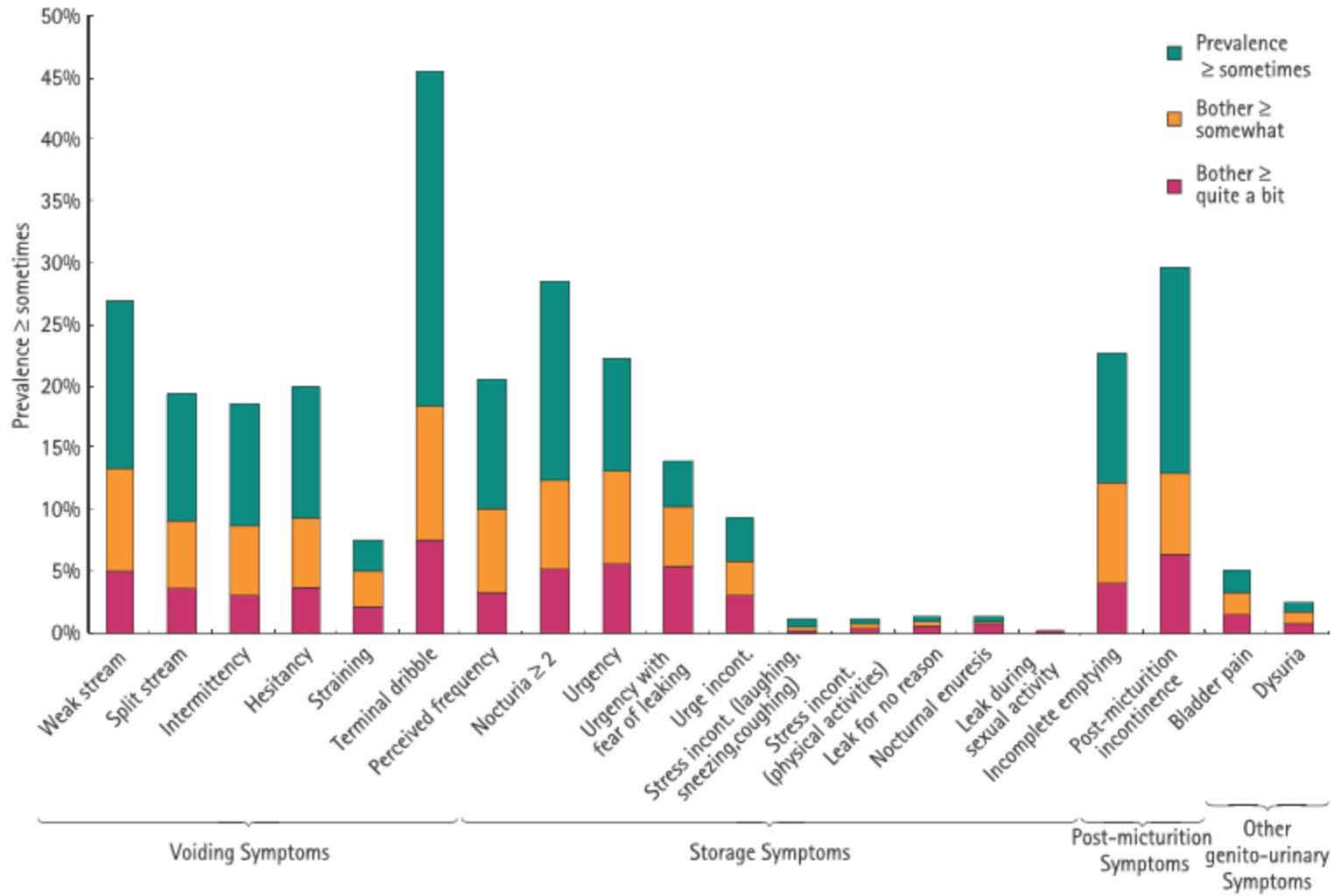
INTERNATIONAL PROSTATE SYMPTOM SCORE

In the past month:	Not at All	Less than 1 in 5 Times	Less than Half the Time	About Half the Time	More than Half the Time	Almost Always	Your score
1. Incomplete Emptying How often have you had the sensation of not emptying your bladder?	0	1	2	3	4	5	
2. Frequency How often have you had to urinate less than every two hours?	0	1	2	3	4	5	
3. Intermittency How often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency How often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream How often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining How often have you had to strain to start urination?	0	1	2	3	4	5	
	None	**1 Time**	**2 Times**	**3 Times**	**4 Times**	**5 Times**	
7. Nocturia How many times did you typically get up at night to urinate?	0	1	2	3	4	5	

BJUI
BJU INTERNATIONAL

The prevalence of lower urinary tract symptoms (LUTS) in the USA, the UK and Sweden: results from the Epidemiology of LUTS (EpiLUTS) study

Karin S. Coyne, Chris C. Sexton, Christine L. Thompson, Ian Milsom*, Debra Irwin†, Zoe S. Kopp‡, Christopher R. Chapple§, Steven Kaplan¶, Andrea Tubaro††, Lalitha P. Aiyer‡ and Alan J. Wein‡‡



NOCTURIA AND BENIGN PROSTATIC HYPERPLASIA

KOJI YOSHIMURA, HIROKI OHARA, KENTARO ICHIOKA, NAOKI TERADA, YOSHIYUKI MATSUI, AKITO TERAI, AND YOICHI ARAI

	Patients scoring ≥2 score before TURP	Patients scoring ≥2 score after TURP	Rate of response (%)
Emptying	102	27	54.3
Voiding frequency	116	63	38.4
Intermittency	101	33	49.3
Urgency	103	70	37.0
Weak stream	122	35	63.0
Hesitancy	84	18	47.8
Nocturia	118	91	19.6

UROLOGY 61 (4), 2003:786-790

Why do urologists need to master nocturia management?

Flawed understanding of nocturia can lead to incorrect management

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Southmead Hospital
Bristol
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Consider this scenario: a 75-year-old man, presenting to his general practitioner, complained of nocturia (three voids at night), weak stream and prolonged micturition. Physical examination was unremarkable, and ultrasound revealed a 65 cc prostate with post-voiding residual volume of 25 cc. His PSA was 2.4 ng/ml and maximum flow rate (Q_{max}) was 9 ml/sec. His treating physician prescribed him a course of α1 blocker.

metabolic disturbances. A meta-analysis conducted by Fan and colleagues found that nocturia was associated with a 22% increase of all-cause mortality[6].

Accurate assessment of nocturia should be initiated with a careful history and physical examination, which should not be limited only to the urinary tract but should consider all body systems that could influence urine output. Appropriate clinical assessment and management requires a beyond-urology approach[3]. A dogmatic perspective of nocturia as a lower urinary tract symptom and consequently erroneous treatment of a presumed lower urinary tract disease might miss the window of curability of a serious condition in which nocturia may manifest as an early symptom. Presumption of nocturia as a lower tract symptom, potentially, might be dangerously misleading[4].

Mechanisms

The underlying pathophysiologic process of nocturia can be regarded as comprising five categories:

1) *Global polyuria*
Global polyuria is defined as a more than 40 ml/kg/24h urine output[7]. This overproduction of urine occurs during both day and night, leading to increased frequency throughout the diurnal cycle. Potential causes of global polyuria include poorly controlled diabetes mellitus, diabetes insipidus and primary polydipsia.

2) *Nocturnal polyuria*
Management of nocturnal polyuria depends on the underlying disease. Therefore, identification, if possible, of the cause is a key step to appropriate personalised patient management. Aetiology-directed treatment might include continuous positive airway pressure therapy in cases of obstructive sleep apnea, adequate

Table 1: Summary treatment recommendations of the EAU Guidelines panel on non-neurogenic Male LUTS 2017

	LE	GR
Treatment should aim to address underlying causative factors, which may be behavioural, systemic condition(s), sleep disorders, lower urinary tract dysfunction, or a combination of factors	4	A*
Lifestyle changes to reduce nocturnal urine volume and episodes of nocturia, and improve sleep quality should be discussed with the patient	3	A*
Desmopressin may be prescribed to decrease nocturia in men under the age of 65. Screening for hyponatremia must be undertaken at baseline, during dose titration and during treatment.	1a	A
α-1 adrenergic antagonists may be offered to men with nocturia associated with lower urinary tract symptoms	1b	B
Anti-muscarinic drugs may be offered to men with nocturia associated with overactive bladder	1b	B
5α-Reductase inhibitors may be offered to men with nocturia who have moderate-to-severe LUTS and an enlarged prostate (>40 mL)	1b	C
PDE5 inhibitors should not be offered for the treatment of nocturia	1b	B
A trial of timed diuretic therapy may be offered to men with nocturia due to nocturnal polyuria. Screening for hyponatremia should be undertaken at baseline and during treatment.	1b	C
Agents to promote sleep may be used to aid return to sleep in men with Nocturia.	2	C

*LE: level of evidence; GR: Grade of recommendation; PDE5: Phosphodiesterase type 5; *: upgraded on panel consensus*

underlying pathophysiology of the disease.

Erroneous perception of nocturia exclusively as an expression of lower urinary tract dysfunction can be misleading and can have serious implications for the appropriate management of the patients. Specifically, a urologist who is not alert to the systemic contributors may miss the opportunity to identify a

REVIEWS

Nocturia: aetiology and treatment in adults

Hasan Dani, Ashanda Esdaille and Jeffrey P. Weiss

”Nocturia occurs when the nocturnal urine volume exceeds the maximum voided volume that reflects the functional bladder capacity..."

Dani H Nature Reviews 13 : 573, 2016

ΜΕΙΩΣΗ ΝΥΚΤΕΡΙΝΗΣ ΧΩΡΗΤΙΚΟΤΗΤΑΣ ΤΗΣ ΚΥΣΤΗΣ

ΑΥΞΗΣΗ ΝΥΚΤΕΡΙΝΟΣ ΟΓΚΟΣ ΟΥΡΗΣΗΣ

Published in final edited form as:
Nat Commun. ; 3: 809. doi:10.1038/ncomms1812.

Involvement of urinary bladder Connexin43 and the circadian clock in coordination of diurnal micturition rhythm

Hiromitsu Negoro[1,2], **Akihiro Kanematsu**[1,3], **Masao Doi**[4], **Sylvia O. Suadicani**[5,6], **Masahiro Matsuo**[4], **Masaaki Imamura**[1], **Takeshi Okinami**[1], **Nobuyuki Nishikawa**[1], **Tomonori Oura**[7], **Shigeyuki Matsui**[8], **Kazuyuki Seo**[4], **Motomi Tainaka**[4], **Shoichi Urabe**[4], **Emi Kiyokage**[9], **Takeshi Todo**[10], **Hitoshi Okamura**[4,*], **Yasuhiko Tabata**[2], and **Osamu Ogawa**[1,*]

Urologia Internationalis

Original Paper

Lack of Change in the Adaptation Ability of the Bladder for the Urine Production Rate in Aged Men with Nocturia

Kira S. · Mitsui T. · Miyamoto T. · Ihara T. · Nakagomi H. · Sawada N. · Takeda M.

Sleep disorders

Primary sleep disorders: insomnia, periodic leg movements, narcolepsy, arousal disorders (ie, sleepwalking, nightmares)

Secondary sleep disorders: cardiac failure, chronic obstructive pulmonary disease, endocrine disorders

Neurologic conditions: Parkinson disease, dementia, epilepsy

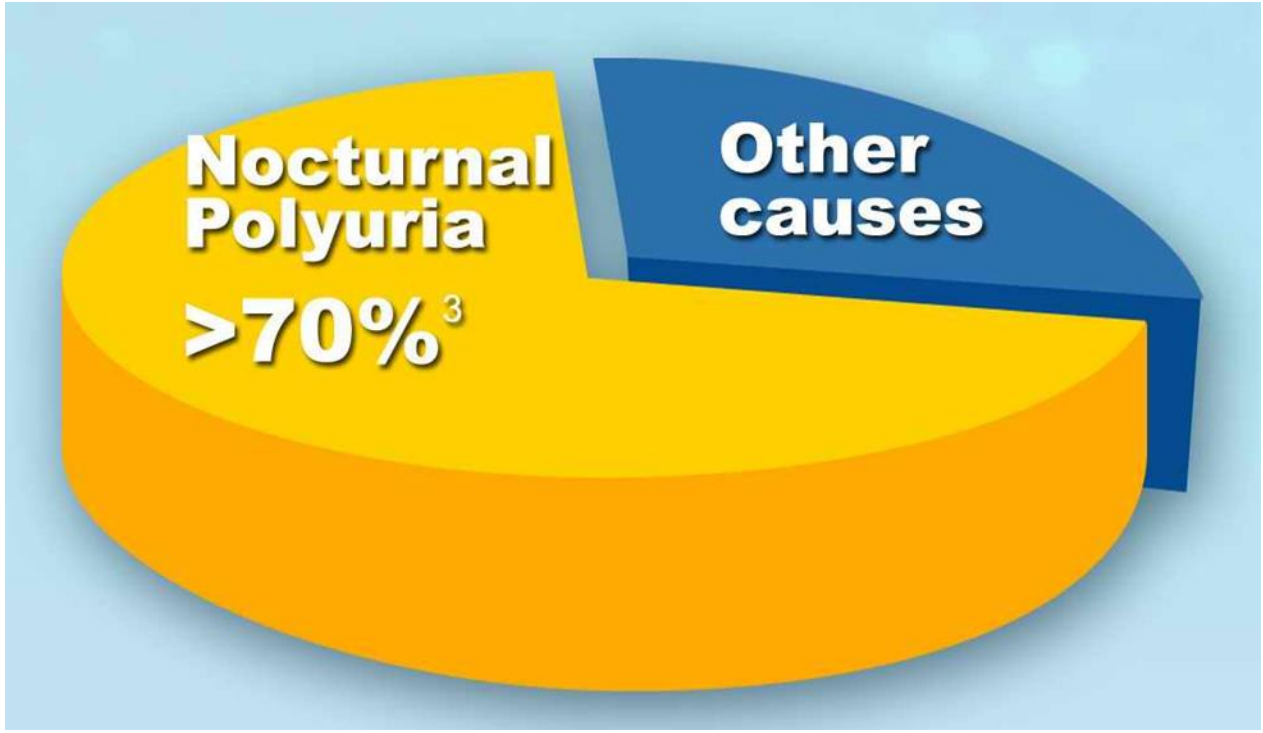
Psychiatric conditions: depression, anxiety

Chronic pain disorders

Alcohol or drug use (consumption or withdrawal)

Medications (corticosteroids, diuretics, β-adrenergic antagonists, thyroid hormones, psychotropics, antiepileptics)

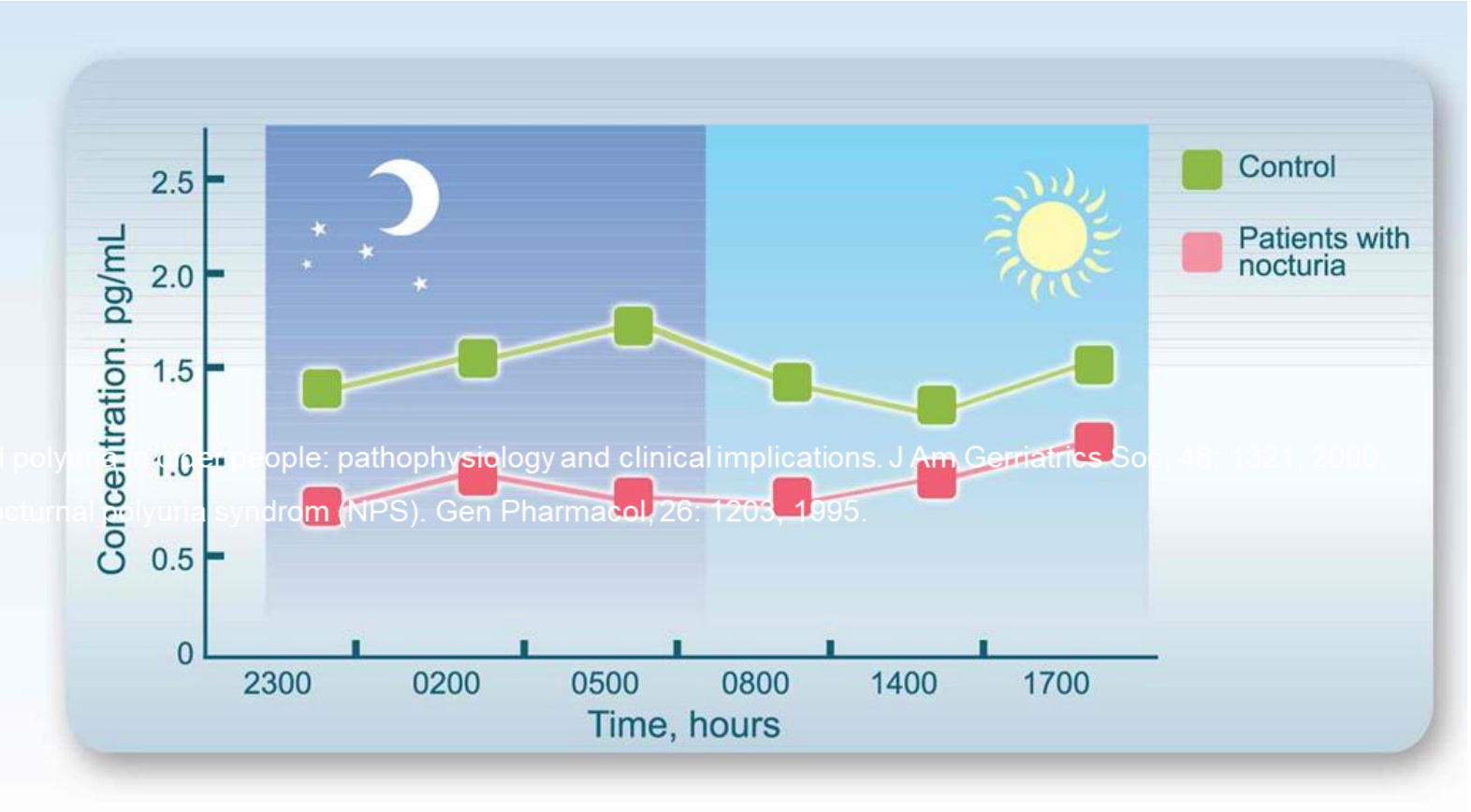
ΑΙΤΙΟΛΟΓΙΑ ΝΥΚΤΟΥΡΙΑΣ



- αύξηση παραγωγής ούρων κατά την διάρκεια της νύχτας
- >20% στους νέους
- >33% στους ηλικιωμένους (>65 ετών)
- παραγωγή ούρων κατά την διάρκεια της νύχτας >90 ml/h
- θεωρείται ότι οφείλεται σε διαταραχή του κυρκαδιανού ρυθμού της έκκρισης της αντιδιουρητικής ορμόνης
- άλλες αιτίες περιλαμβάνουν καρδιακή ανεπάρκεια, αποφρακτική πνευμονοπάθεια, ηπατική ανεπάρκεια, υποαλβουμιναιμία

Lose G. et al. J Urol 172, 1021-1025, 2004

Οι ασθενείς με νυκτουρία παράγουν λιγότερη ADH κατά την διάρκεια της νύχτας σε σχέση με τους υγιής ανθρώπους



Miller, M.; Nocturnal polyuria in older people: pathophysiology and clinical implications. J Am Gerriatrics Soc, 48: 1321, 2000.

Asplund, R.: The nocturnal polyuria syndrom (NPS). Gen Pharmacol, 26: 1203, 1995.

INTERNATIONAL JOURNAL OF UROLOGY
International Journal of Urology (2015) 22, 496–501 doi: 10.1111/iju.12710

Original Article: Clinical Investigation

Nocturia in men is a chaotic condition dominated by nocturnal polyuria

Tetsuya Fujimura,[1] Yuta Yamada,[1] Toru Sugihara,[1] Takeshi Azuma,[1] Motofumi Suzuki,[2] Hiroshi Fukuhara,[1] Tohru Nakagawa,[1] Haruki Kume,[1] Yasuhiko Igawa[3] and Yukio Homma[1]

Table 4 Spearman coefficient (σ) between nocturia and clinical parameters and practical cut-off value of each parameter for nocturia

	ρ	*P*-value	Cut-off for 3	AUC[c]	*P*-value	Cut-off for 4	AUC[c]	*P*-value	Cut-off for 5	AUC[c]	*P*-value
Nocturnal urine volume/BW (mL/kg)	0.26	<0.0001	7	0.66	<0.0001	9	0.60	0.004	9.7	0.65	0.02
Average voided volume (mL)	−0.21	0.0002	204	0.58	0.01	170	0.62	<0.0001	203	0.58	0.03
Age (years)	0.20	0.0005	72	0.63	0.003	75	0.59	0.003	81	0.54	0.03
Urgency	0.20	0.0004	2	0.58	0.03	3	0.58	0.008	3	0.65	0.002
Sleep quality	0.20	0.0005	1	0.58	0.007	1	0.58	0.01	2	0.62	0.006
eGFR (mL/min/1.73 m^2)	−0.17	0.0055	62	0.60	0.004	65	0.58	0.01	56	0.54	0.5
Sleepiness during the day	0.12	0.02	1	0.54	0.11	1	0.53	0.23	1	0.54	0.34
Bladder pain	0.09	0.12	1	0.56	0.02	1	0.51	0.62	0	0.51	0.87

$n = 299$.

EUROPEAN UROLOGY 67 (2015) 289–290

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Platinum Priority – Editorial

Referring to the article published on pp. 283–288 of this issue

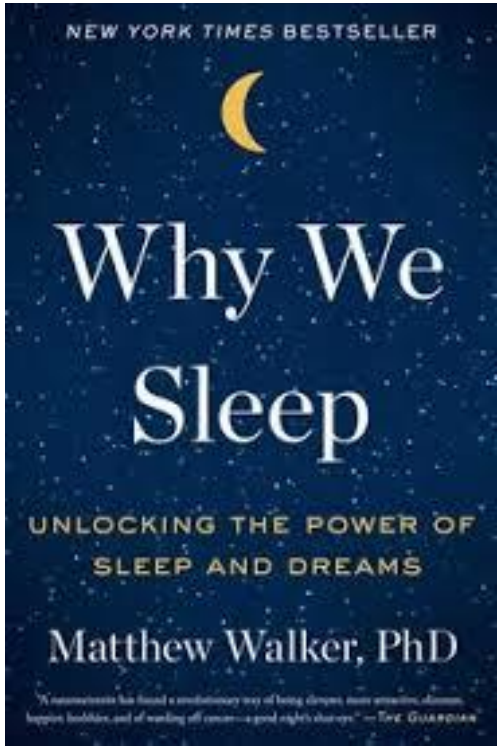
Should Nocturia Not Be Called a Lower Urinary Tract Symptom?

Marcus J. Drake *

School of Clinical Sciences, University of Bristol, Bristol, UK

"….Thus, it is not appropriate for health care professionals to regard **nocturia solely as a LUTS**, and instigation of treatment for a presumed LUTD when nocturia is a main symptom **is potentially dangerous** if full consideration is not given to wider potential factors…"

"…Nocturia is a common problem, and since LUTD is directly causative in a minority of cases, perhaps it should more appropriately be termed a **systemic symptom rather than LUTS**…"



"Εάν ο ύπνος δεν εξυπηρετεί καμίας ζωτικής σημασίας λειτουργία του ανθρώπινου σώματος τότε είναι σίγουρα το μεγαλύτερο λάθος στη διαδικασία εξέλιξης του είδους"

1. Rechtschaffen. The control of sleep. In: Hunt, editor. Human behaviour and its control. Cambridge, MA: Schenkman; 1971

Λειτουργία του ύπνου

- Ο ύπνος αποτελεί ακόμα ένα βιολογικό αίνιγμα αλλά είναι σίγουρα απαραίτητος για την ανάκτηση και αποκατάσταση φυσικών και πνευματικών λειτουργιών
- Είναι σημαντικός για την ορθή λειτουργία του ενδοκρινικού, μεταβολικού και ανοσοποιητικού συστήματος
- Επηρεάζει όλα τα όργανα του ανθρώπινου σώματος
- Η έλλειψη ύπνου προκαλεί διαταραχή του βιολογικού ρυθμού

Hunter. *EMBO reports* 2008;9:1070–1073

Στάδια του ύπνου(1)

Non-REM (NREM) ύπνος (75–80%)

- Μεγαλύτερο βάθος ύπνου και μείωση του μυικού τόνου
- Μείωση αναπνευστικού και καρδιακού ρυθμού και μείωση κινήσεων οφθαλμού
- Σωματική ανάπαυση και ανάκτηση ανοσοποιητικού συστήματος
- Στάδιο 1: Μετάβαση στον ύπνο(1–5%)
- Στάδιο 2: αληθής ύπνος(45–50%)
- Στάδιο 3: βαθειά, αργά κύματα ύπνου (SWS 25-27%)
- Στάδιο 4: SWS, αργή αναπνοή, αργός καρδιακός ρυθμός, βαθύς ύπνος

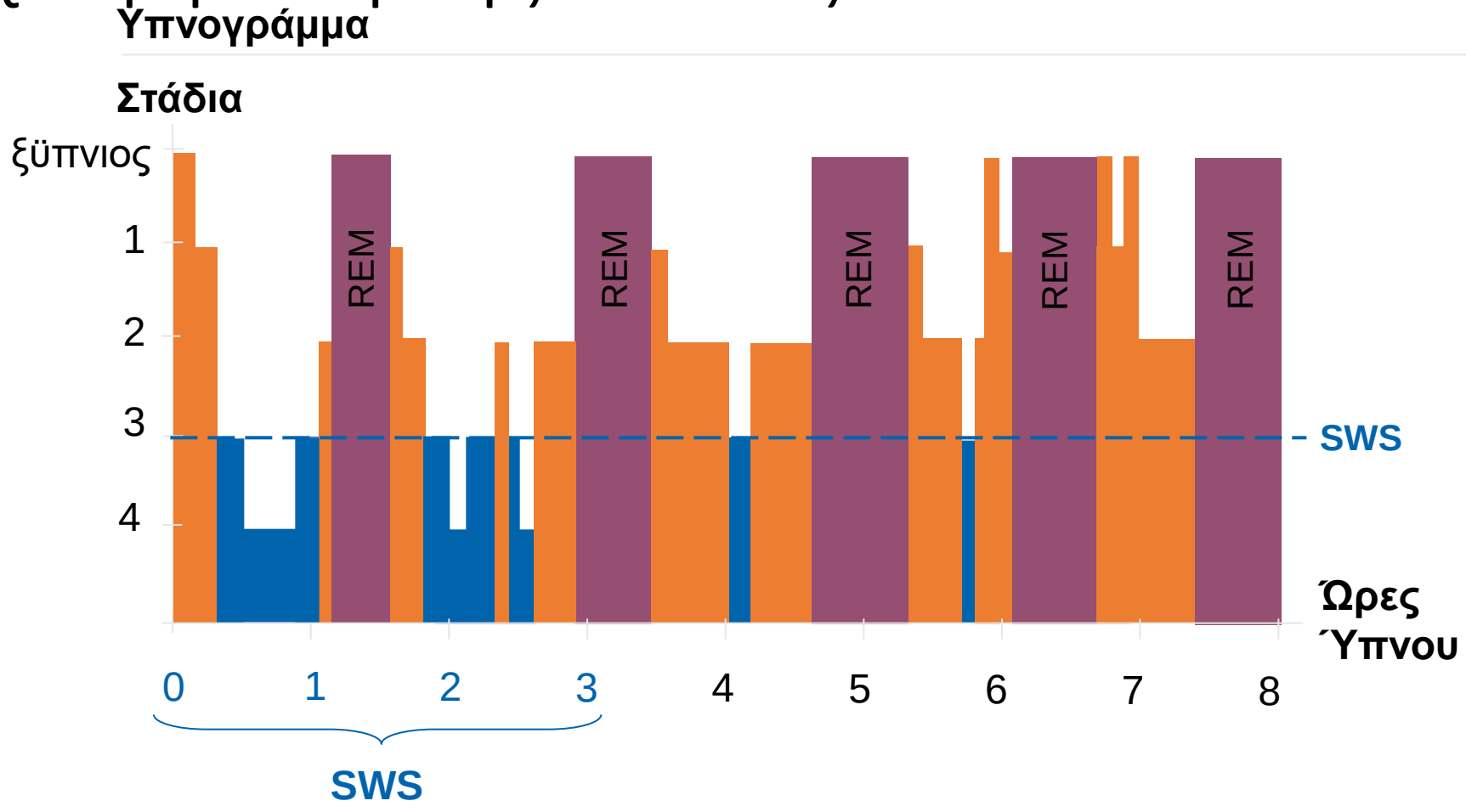
REM, rapid eye movement

Στάδια ύπνου(2)

REM sleep (20–25%)

- Ακανόνιστος ρυθμός αναπνοής και αύξηση καρδιακού ρυθμού
- Χαμηλός μυικός τόνος
- Όνειρα
- Ψυχολογική ανάπαυση

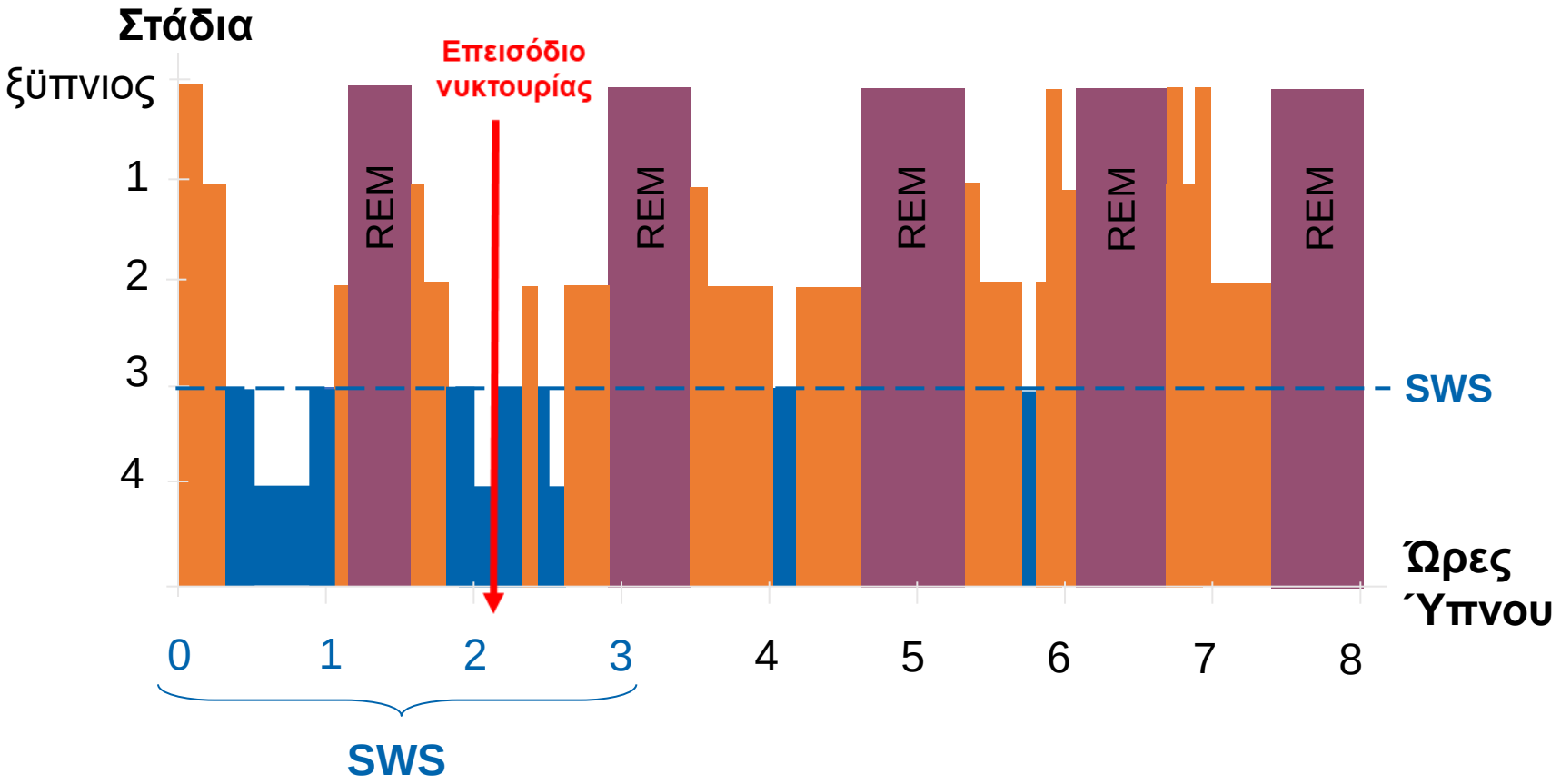
Restorative ύπνος(SWS) συμβαίνει στην αρχική φάση της νύκτας



SWS, slow-wave sleep
Stanley. *Eur Urol Suppl* 2005;3:17–23

Κατά μέσο όρο το πρώτο επεισόδιο νυκτουρίας συμβαίνει στις πρώτες 2-3 ώρες ύπνου [1]

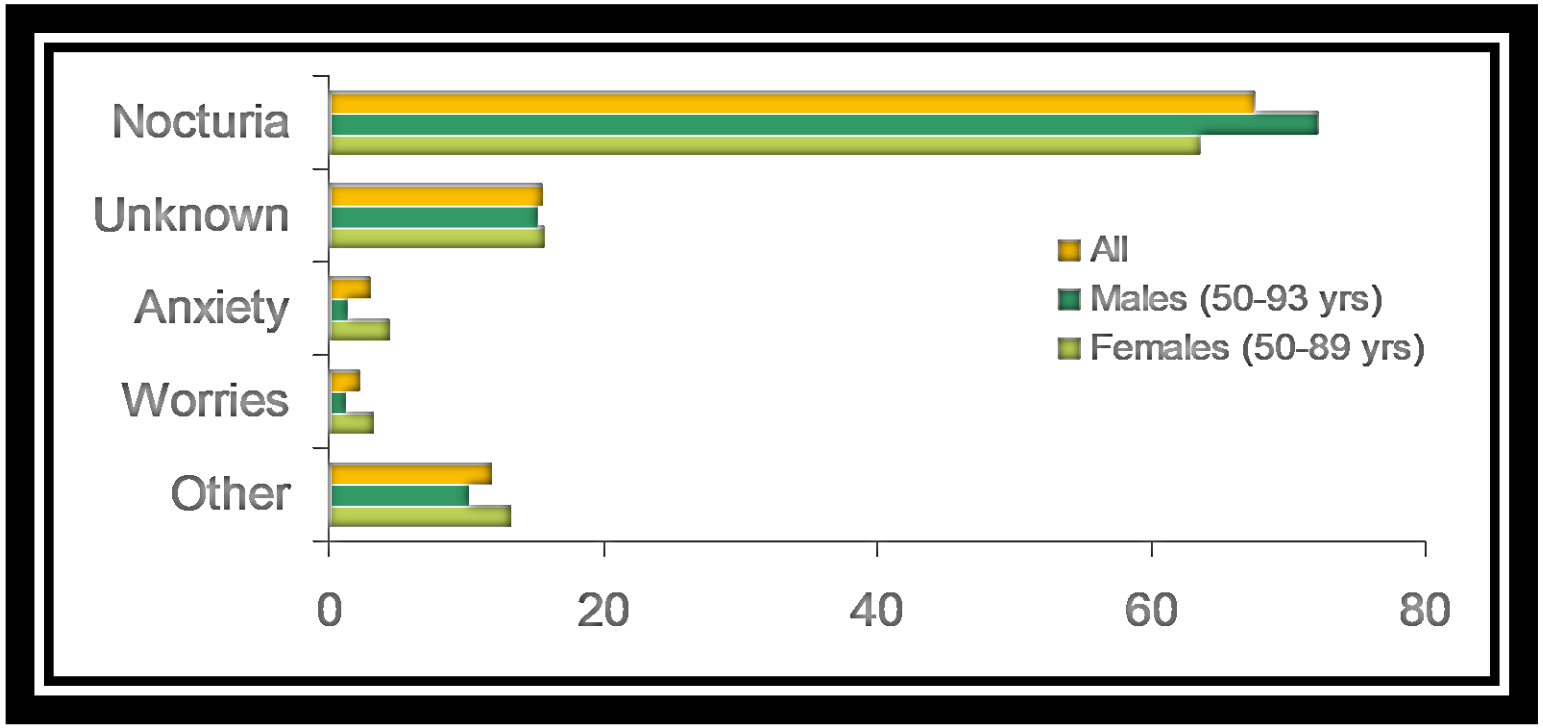
Υπνογράμμα



1) van Kerrebroeck et al. Eur Urol 2007;52:221–229

ΑΙΤΙΕΣ ΔΙΑΤΑΡΑΧΗΣ ΥΠΝΟΥ

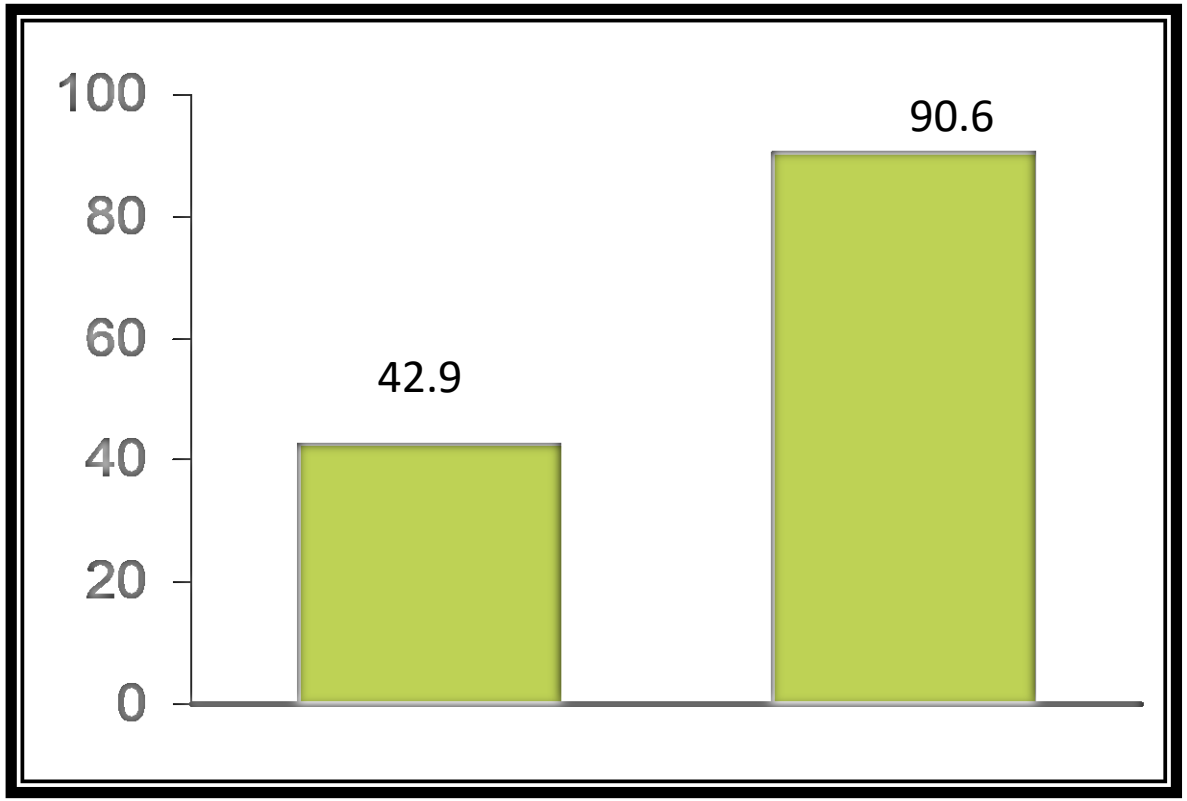
άτομα 50-93 (N:1117) (1)



Κατά μέσο όρο, τα άτομα με νυκτουρία κοιμούνται για μια αρχική περίοδο μόνο 2-3 ώρες πριν αναγκαστούν να ξυπνήσουν για να ουρήσουν (2)

1. Middelkoop et al. *J Gerontol A Biol Sci Med Sci* 1996;51:M108–M115; 2. van Kerrebroeck et al. *Eur Urol* 2007;52:221–229

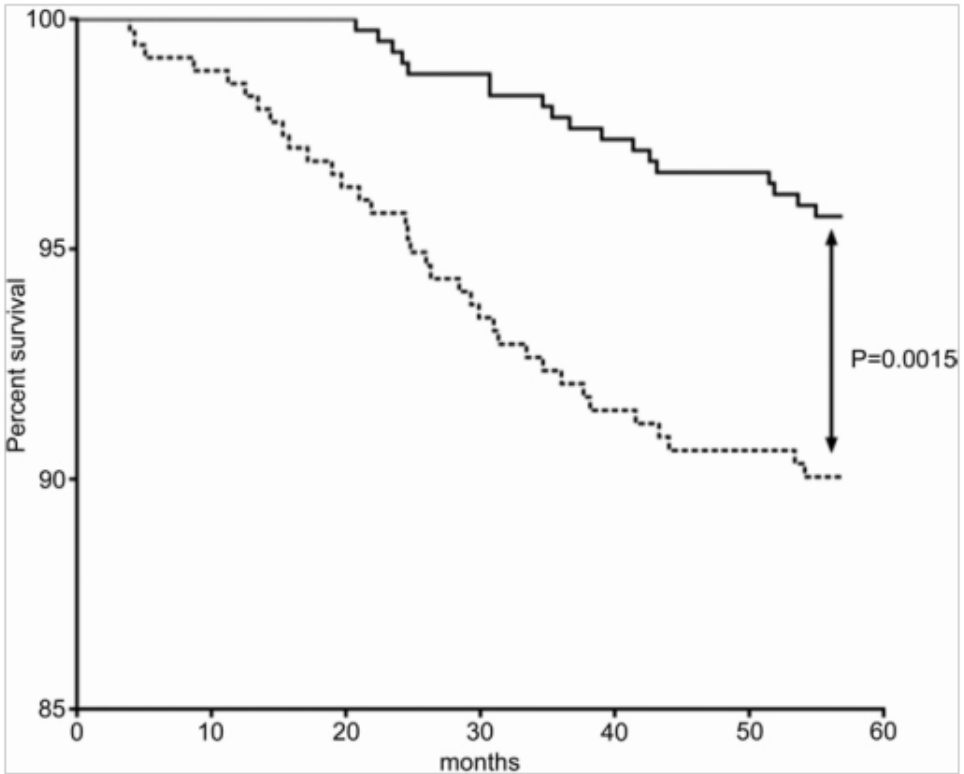
Ποσοστό ασθενών με συμπτώματα κατωτέρου ουροποιητικού που χαρακτηρίζουν την ποιότητα ζωής τους καλή ή πολύ καλή



Hernandez et al. *Curr Med Res Opin* 2008 [Epub ahead of print]

Impact of Nocturia on Bone Fracture and Mortality in Older Individuals: A Japanese Longitudinal Cohort Study

Haruo Nakagawa,* Kaijun Niu, Atsushi Hozawa, Yoshihiro Ikeda, Yasuhiro Kaiho, Kaori Ohmori-Matsuda, Naoki Nakaya, Shinichi Kuriyama, Satoru Ebihara, Ryoichi Nagatomi, Ichiro Tsuji and Yoichi Arai

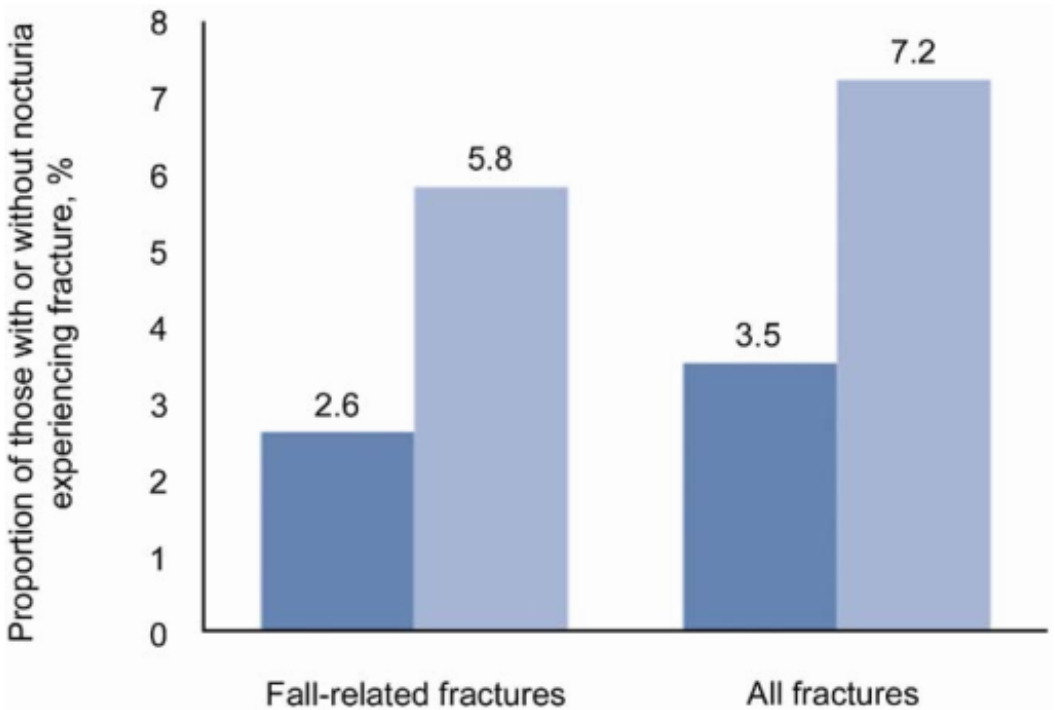


καμπύλη Kaplan-Meier δείχνει σημαντική μειωμένη θνητότητα σε ασθενείς χωρίς σε σχέση με νυκτουρία

Urol. 2010 Oct;184(4):1413-8

Impact of Nocturia on Bone Fracture and Mortality in Older Individuals: A Japanese Longitudinal Cohort Study

Haruo Nakagawa,* Kaijun Niu, Atsushi Hozawa, Yoshihiro Ikeda, Yasuhiro Kaiho, Kaori Ohmori-Matsuda, Naoki Nakaya, Shinichi Kuriyama, Satoru Ebihara, Ryoichi Nagatomi, Ichiro Tsuji and Yoichi Arai



συχνότητα των όλων και των σετιζόμενων με πτώση καταγμάτων σε 359 ασθενείς με και χωρίς νυκτουρία (κάθε ένα p-0.03)

Urol. 2010 Oct;184(4):1413-8

BJUI
BJU INTERNATIONAL

Nocturia is associated with an increased risk of coronary heart disease and death

Deborah J. Lightner, Amy E. Krambeck, Debra J. Jacobson*, Michaela E. McGree*, Steven J. Jacobsen†, Michael M. Lieber, Véronique L. Roger*, Cynthia J. Girman‡ and Jennifer L. St. Sauver*

TABLE 2 Association between nocturia (≥2 time per night) and adverse outcomes

Outcome	Unadjusted HR (95% CI)	Age-adjusted HR (95% CI)	Multivariable-adjusted* HR (95% CI)
Diabetes mellitus	1.12 (0.74, 1.72)	1.11 (0.72, 1.70)	0.97 (0.61, 1.54)
Hypertension	1.16 (0.93, 1.45)	0.98 (0.78, 1.23)	0.86 (0.68, 1.10)
CHD	1.58 (1.24, 2.03)	1.13 (0.87, 1.45)	1.03 (0.78, 1.36)
Death	2.22 (1.82, 2.71)	1.14 (0.93, 1.40)	1.22 (0.96, 1.54)

**Adjusted for baseline age, BMI, and use of α-blockers, 5α-reductase inhibitors, and/or OAB medications; death adjusted for baseline age, BMI, use of α-blockers, 5α-reductase inhibitors and/or OAB medications, and CHD.*

BJU Int. 2012 Sep;110(6):848-53

Cardiovascular, Inflammatory, and Metabolic Consequences of Sleep Deprivation

Janet M. Mullington, Monika Haack, Maria Toth,
Jorge M. Serrador and Hans K. Meier-Ewert

sleepmedicine
REVIEWS

The available experimental data, as reviewed here, suggest that with short-term sleep deprivation, BP, inflammation, autonomic tone, and hormones are all altered in a direction that is recognized to contribute to the development of cardiovascular disease, most importantly, atherosclerosis. The changes seen with experimental

Sleep Med Rev. 2003 Aug;7(4):297-310.

BJUI
BJU International

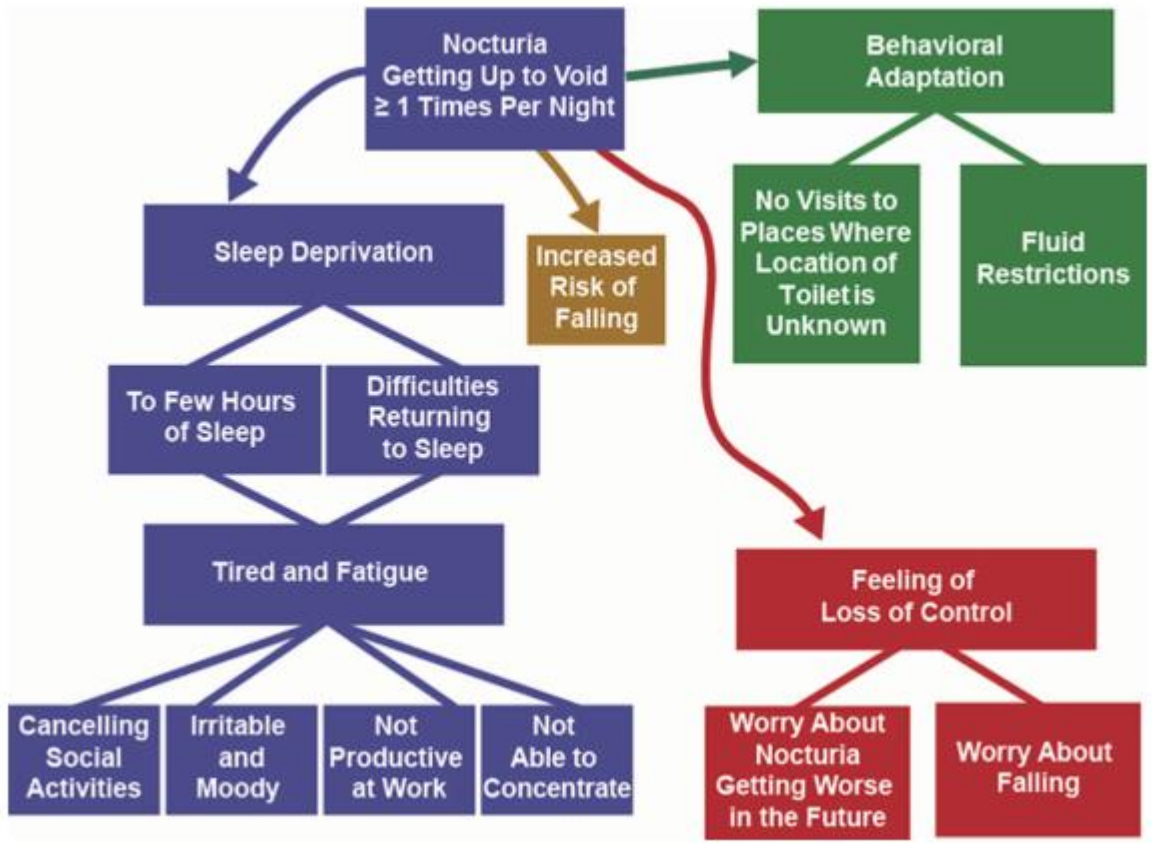
Nocturia increases the incidence of depressive symptoms: a longitudinal study of the HEIJO-KYO cohort

Kenji Obayashi*, Keigo Saeki*, Hiromitsu Negoro† and Norio Kurumatani*

	NV frequency		P
	≥2 times/night: nocturia	<2 times/night: non-nocturia	
Number of incident depressive symptoms	32/239	43/627	
Median (IQR) follow-up duration, months	24 (19–34)	23 (17–34)	
Unadjusted HR* (95% CI)	1.88 (1.19, 2.98)	1.00 (reference)	0.007
Adjusted HR* (95% CI)			
Adjusted model 1†	1.69 (1.05, 2.72)	1.00 (reference)	0.032
Adjusted model 2‡	1.69 (1.05, 2.73)	1.00 (reference)	0.032
Adjusted model 3§	1.68 (1.02, 2.75)	1.00 (reference)	0.040

*IQR, interquartile range; HR, hazard ratio; CI, confidence interval; NV, nocturnal void. *Hazard ratios for incident depressive symptoms indicate values in the nocturia group when those in the non-nocturia group are as reference. †Model 1: adjusted for basic variables associated with nocturia (age, gender, alcohol consumption, and day length; $P < 0.25$; Table 1). ‡Model 2: adjusted for model 1 plus clinical variables associated with nocturia (age, gender, alcohol consumption, day length, hypertension and chronic kidney disease; $P < 0.25$; Table 1). §Model 3: adjusted for model 1 plus sleep parameters associated with nocturia (age, gender, alcohol consumption, day length, sleep disturbances, bedtime, and duration in bed; $P < 0.25$; Table 1).*

ΟΙΚΟΝΟΜΙΚΕΣ ΕΠΙΠΤΩΣΕΙΣ ΝΥΚΤΟΥΡΙΑΣ ΣΤΗΝ ΚΟΙΝΩΝΙΑ



Larsen et al Neurourology and Urodynamics 33:S10–S14 (2014)

	Men	Women
Average wage per hour	€14.1	€10.9
Productivity loss per person	180 hours	143 hours
Value of total lost productivity in EU per year	€17,753,966,984	€10,918,327,646

van Kerrebroeck P , Holm-Larsen T ICS Abstract No 373

EAU Guidelines on

Management of Non-Neurogenic Male Lower Urinary Tract Symptoms (LUTS), incl. Benign Prostatic Obstruction (BPO)

S. Gravas (Chair), J.N. Cornu, M.J. Drake, M. Gacci, C. Gratzke, T.R.W. Herrmann, S. Madersbacher, C. Mamoulakis, K.A.O. Tikkinen

Guidelines Associates: M. Karavitakis, I. Kyriazis, S. Malde, V. Sakkalis, R. Umbach

European Association of Urology

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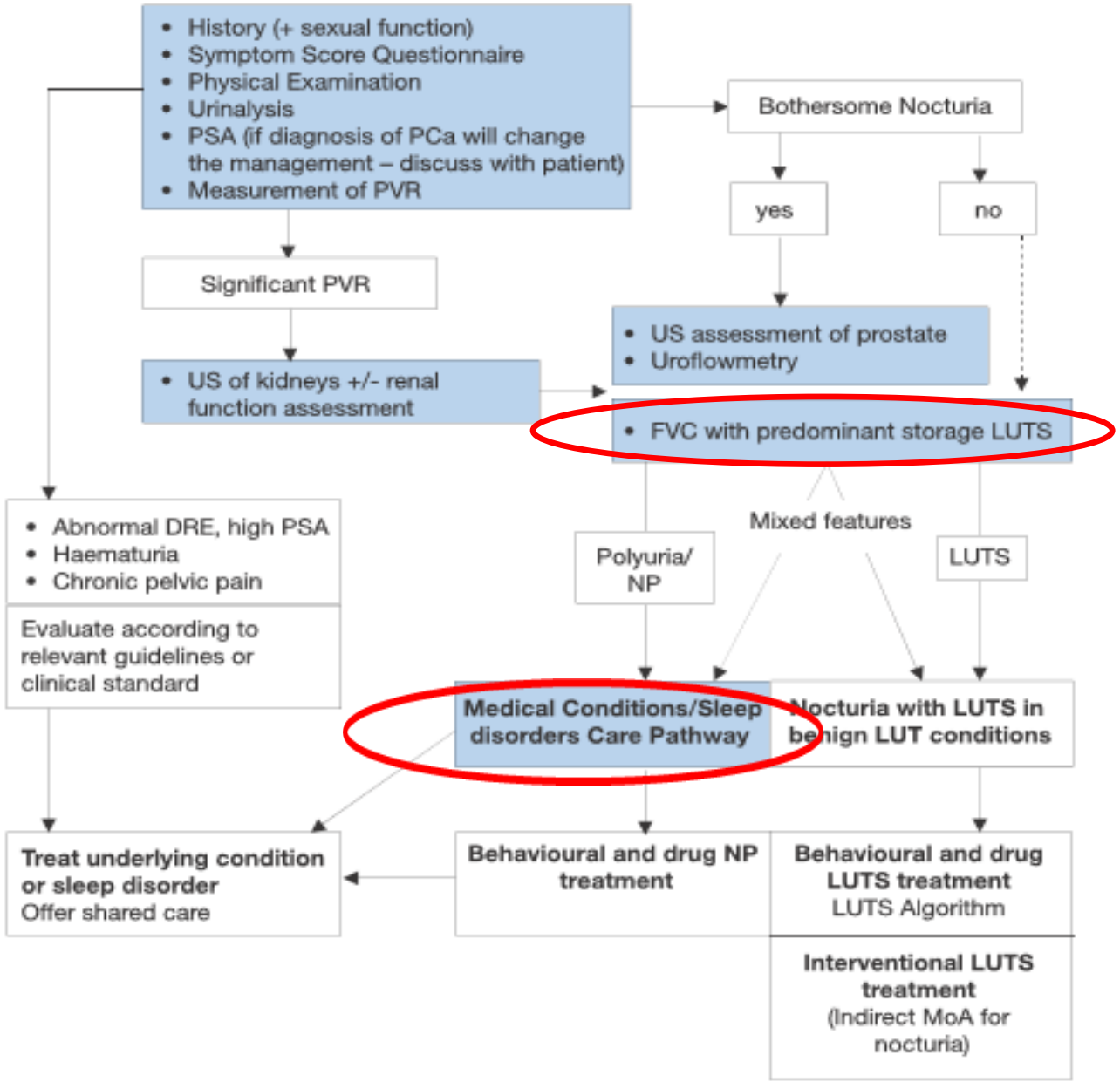
European Association of Urology

ΕΚΤΙΜΗΣΗ ΑΣΘΕΝΟΥΣ ΜΕ ΝΥΤΚΟΥΡΙΑ



ΗΜΕΡΟΛΟΓΙΟ ΟΥΡΗΣΗΣ

ΗΜΕΡΟΛΟΓΙΟ ΟΥΡΗΣΗΣ

ΟΝΟΜΑ:_____ ΗΜΕΡΟΜΗΝΙΑ:_____

ΩΡΑ	ΥΓΡΑ	ΠΟΣΟΤΗΤΑ ΟΥΡΩΝ	ΕΠΙΤΑΚΤΙΚΟΤΗΤΑ (ΝΑΙ/ΟΧΙ)	ΑΚΡΑΤΕΙΑ (ΜΙΚΡΗ/ ΜΕΤΡΙΑ/ ΜΕΓΑΛΗ)	ΔΡΑΣΤΗΡΙΟΤΗΤΑ
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- ακρογωνιαίος λίθος στην εκτίμηση της νυκτουρίας
- ακριβής εκτίμηση της νυκτουρίας όσο αφορά την αιτιολογία και την βαρύτητα της μπορεί να βασιστεί μόνο και μόνο στο η.ο

Van Kerrebroeck P Neurol Urod 2002;21:179–83

Neurourology and Urodynamics 21:179–183 (2002)
DOI 10.1002/nau.10053

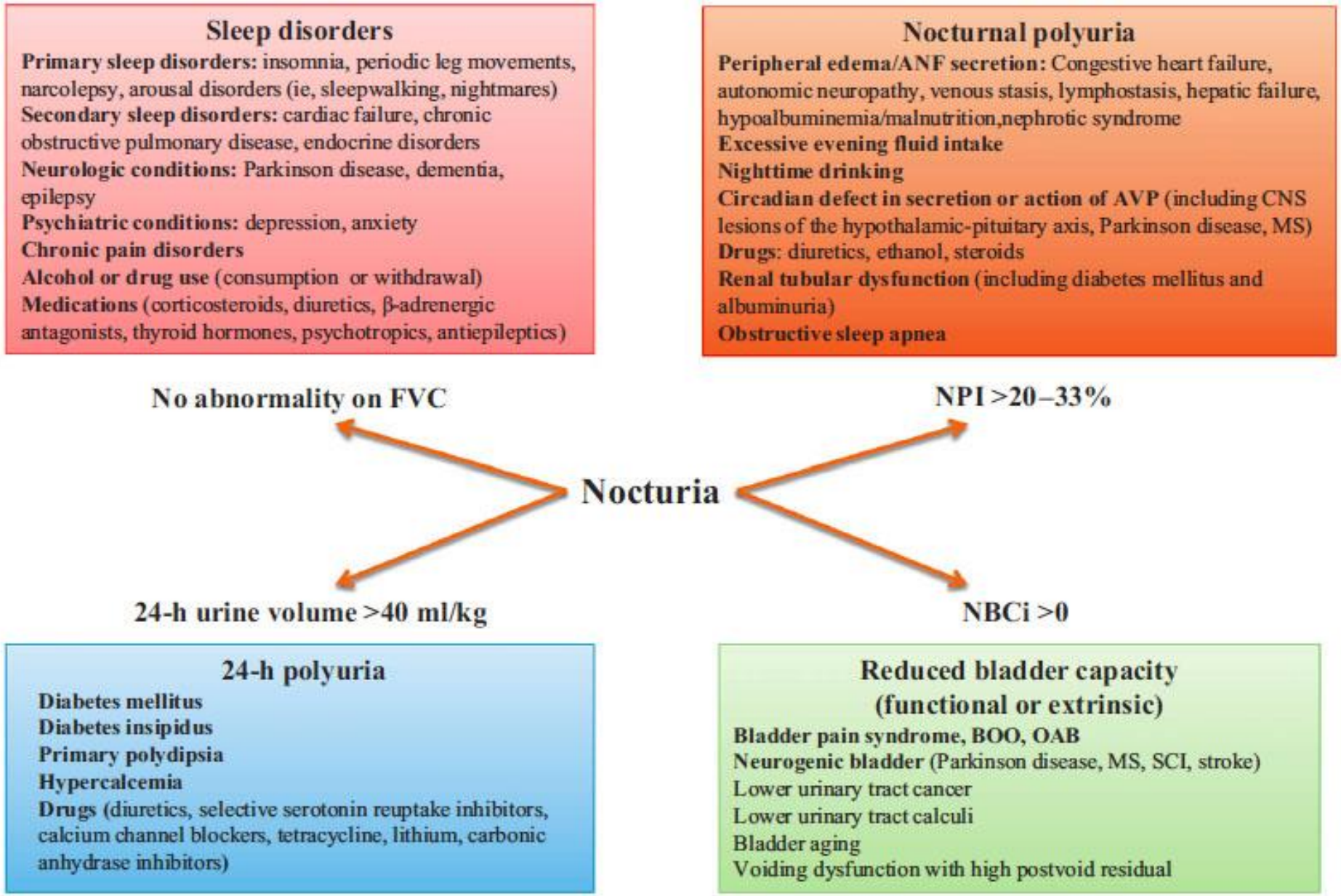
The Standardisation of Terminology in Nocturia:
Report from the Standardisation Sub-committee of the International Continence Society

Philip van Kerrebroeck,[1] Paul Abrams,[2] David Chaikin,[3] Jenny Donovan,[4] David Fonda,[5] Simon Jackson,[6] Poul Jennum,[7] Theodore Johnson,[8] Gunnar Lose,[9] Anders Mattiasson,[10] Gary Robertson,[11] Jeff Weiss[12]

TABLE I. Definitions of Terms Associated with Nocturia and Derived from the Frequency Volume Chart

Terms	Definition
Nocturia	Is the number of voids recorded during a nights sleep: each void is preceded and followed by sleep
Nocturnal urine volume	Total volume of urine passed during the night including the first morning void (see definition)[a]
Rate of nocturnal urine production	Nocturnal urine volume/time asleep (i.e. night). Measured in ml/min[a]
Nocturnal polyuria	Nocturnal urine volume >20-30% of total24h urine volume (age dependent)[a]
24 hour voided volume	Total volume of urine voided during a 24 hour period (1st void to be discarded; 24 hours begins at the time of the next void)
Polyuria	24 hour voided volume in excess of 2800 ml (in 70kg person, i.e. >40ml/kg)
Night[b]	The period of time between going to bed with the intention of sleeping and waking with the intention of arising
Night-time frequency[b]	Is the number of voids recorded from the time the individual goes to bed with the intention of going to sleep, to the time the individual wakes with the intention of rising[a]
First morning void	The first void after waking with the intention of rising
Maximum voided volume	The largest single voided volums measured in a 24 hour period[a]

[a]In the new ICS terminology report these are signs as their derivation is from the frequency volume chart. Symptoms are defined as complaints.
[b]These terms from the definition of nocutira but may be useful in research studies, for example in urine production rate, related to posture.



Cornu JN Eur Urol 62 : 877, 2012

UROLOGICAL CONTRIBUTION	SHARED CARE	MEDICAL CONTRIBUTION
Diagnosis of LUTD • Urological/LUTS evaluation • Nocturia symptom scores • Bladder diary		**Diagnosis of conditions causing NP** • Evaluate patient's known conditions • Screening for sleep disorders • Screening for potential causes of polyuria*
Conservative management Behavioural therapy • Fluid/sleep habits advice • Drugs for storage LUTS • (Drugs for voiding LUTS) • ISC/catherisation	**Conservative management** • Antidiuretic • Diuretics • Drugs to aid sleep	**Management** • Initiation of therapy for new diagnosis • Optimised therapy of known conditions
Interventional therapy • Therapy of refractory storage LUTS • Therapy of refractory voiding LUTS		

* Potential causes of polyuria

NEPHROLOGICAL DISEASE
- Tubular dysfunction
- Global renal dysfunction

CARDIOVASCULAR DISEASE
- Cardiac disease
- Vascular disease

ENDOCRINE DISEASE
- Diabetes insipidus/mellitus
- Hormones affecting diuresis/natriuresis

NEUROLOGICAL DISEASE
- Pituitary and renal innervation
- Autonomic dysfunction

RESPIRATORY DISEASE
- Obstructive sleep apnoea

BIOCHEMICAL
- Altered blood oncotic pressure

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S. Gravas (Chair), J.N. Cornu, M.J. Drake, M. Gacci, C. Gratzke, T.R.W. Herrmann, S. Madersbacher, C. Mamoulakis, K.A.O. Tikkinen
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European Association of Urology

EUROPEAN UROLOGY 67 (2015) 283–288

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journal homepage: www.europeanurology.com

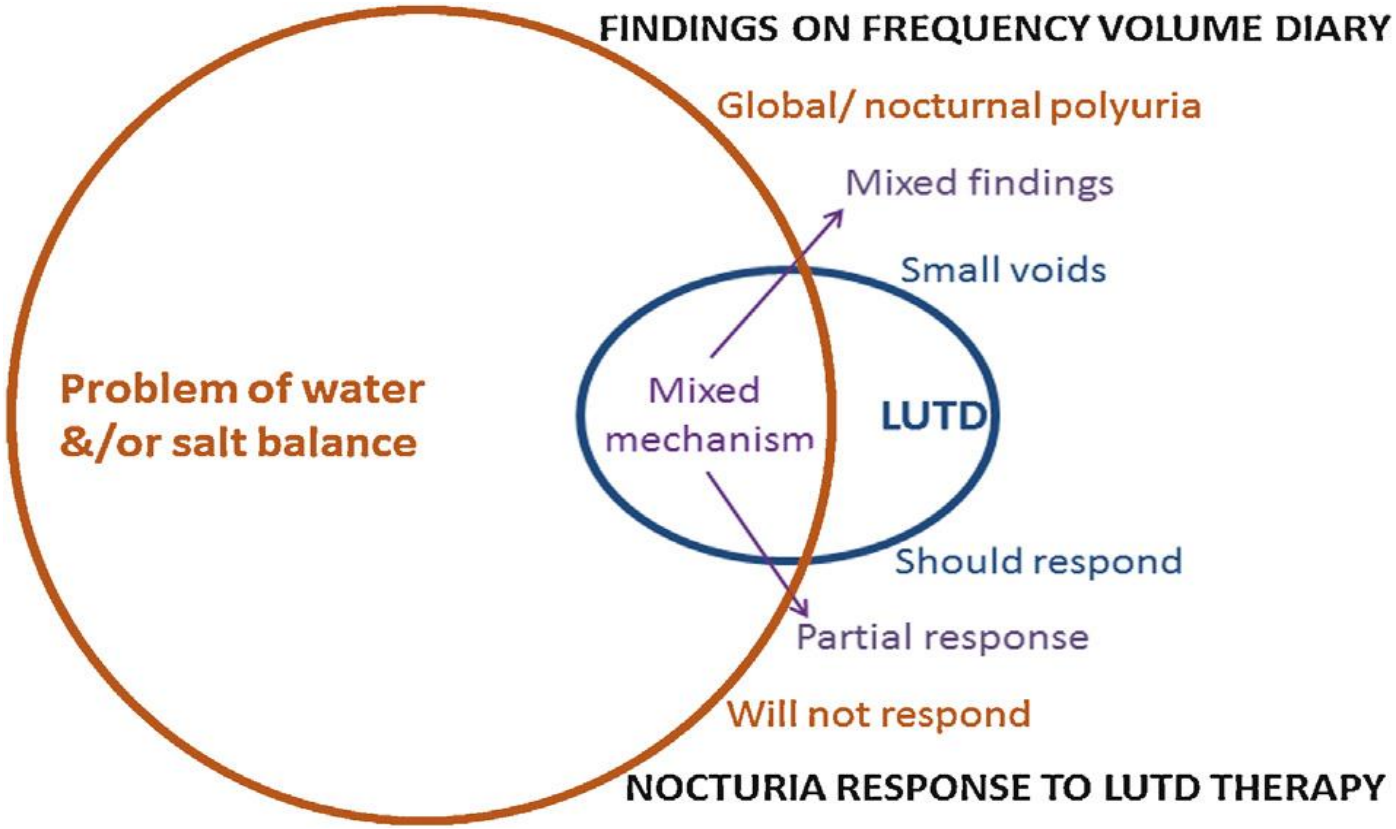
European Association of Urology

Platinum Priority – From Lab to Clinic
Editorial by Marcus J. Drake on pp. 289–290 of this issue

Diagnosing the Pathophysiologic Mechanisms of Nocturnal Polyuria

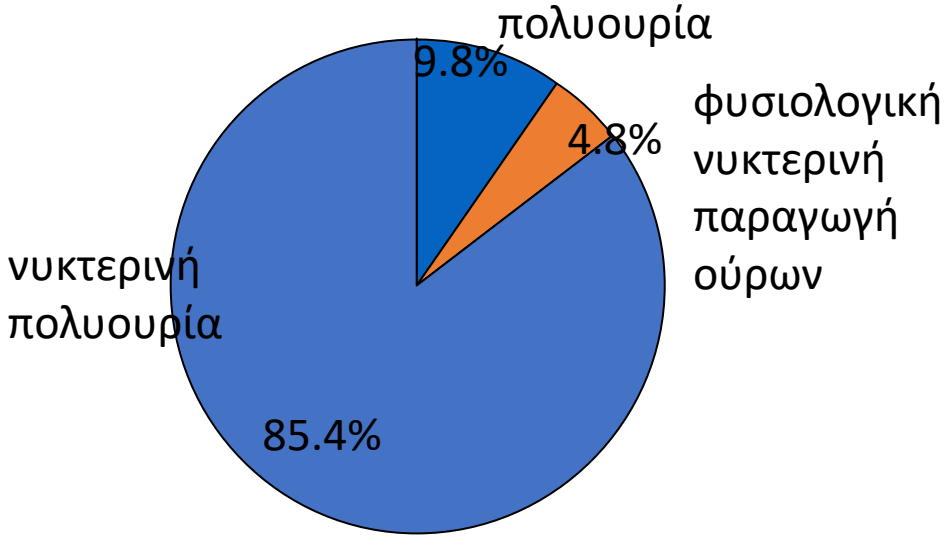
An-Sofie Goessaert [a,*], Louise Krott [b], Piet Hoebeke [a], Johan Vande Walle [c], Karel Everaert [a]

[a]Urology Department, Ghent University Hospital, Ghent, Belgium; [b]Faculty of Medicine, Ghent University, Ghent, Belgium; [c]Pediatric Nephrology Department, Ghent University Hospital, Ghent, Belgium



ΝΥΚΤΕΡΙΝΗ ΠΟΛΥΟΥΡΙΑ ΩΣ ΑΙΤΙΑ ΑΠΟΤΥΧΙΑΣ α1 ΑΔΡΕΝΕΡΓΙΚΩΝ ΥΠΟΔΟΧΕΩΝ

από τους 41 ασθενείς που δεν ανταποκρίθηκαν στην θεραπεία με α-αναστολείς, το 85% βρέθηκε να έχει νυκτερινή πολυουρία



Yoong et al. *Med J Malaysia* 2005;60;294–296

ELSEVIER

ADULT UROLOGY

MULTIFACTORIAL NATURE OF MALE NOCTURIA

SHYH-CHYI CHANG, ALEX T. L. LIN, KUANG-KUO CHEN, AND LUKE S. CHANG

Αιτίες ανδρικής νυχτουρίας (σύνολο n=41)	**ασθενείς (%)**
Μεμονωμένες αιτίες	
Νυχτερινή πολυουρία	**8 (19.51)**
Ουροδόχος κύστη μειωμένης χωρητικότητας	2 (4.88)
Καλοήθεις Υπερπλασία Προστάτου	1 (2.44)
Σύνδρομο Υπνικής Άπνοιας	0 (0)
Διπλός συνδυασμός	
Νυχτερινή πολυουρία + ουρ. κύστη μειωμένης νυχτερινής χωρητικότητας	**6 (14.63)**
Νυχτερινή πολυουρία + καλοήθεις υπερπλασία προστάτου	8 (19.51)
Ουροδόχος κύστη μειωμένης νυχτερινής χωρητικότητας + καλοήθεις υπερπλασία προστάτου	4 (9.76)
Τριπλός συνδυασμός	
Νυχτερινή πολυουρία + ουροδόχος κύστης μειωμένης νυχτερινής χωρητικότητας + καλοήθεις υπερπλασία προστάτου	10 (24.39)
Νυχτερινή πολυουρία + ουροδόχος κύστη μειωμένης νυχτερινής χωρητικότητας + Σύνδρομο Υπνικής Άπνοιας	2 (4.88)

Urology. 2006 Mar;67(3):541-4.

EUROPEAN UROLOGY 72 (2017) 757–769

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European Association of Urology

Platinum Priority – Review – Voiding Dysfunction

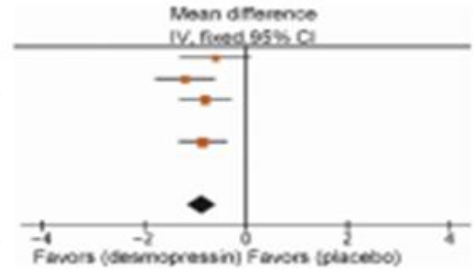
Editorial by Soo Jeong Kim, Omar Al Hussein Alawamlh and Richard K. Lee on pp. 770–771 of this issue

Medical Treatment of Nocturia in Men with Lower Urinary Tract Symptoms: Systematic Review by the European Association of Urology Guidelines Panel for Male Lower Urinary Tract Symptoms

Vasileios I. Sakalis [a], Markos Karavitakis [b], Dina Bedretdinova [c], Thorsten Bach [d], J.L.H. Ruud Bosch [e], Mauro Gacci [f], Christian Gratzke [g], Thomas R. Herrmann [h], Stephan Madersbacher [i], Charalampos Mamoulakis [j], Kari A.O. Tikkinen [k], Stavros Gravas [l,], Marcus J. Drake [m]*

Table 1 – Effect of desmopressin (with dose titrated against response) on nocturnal voiding frequency

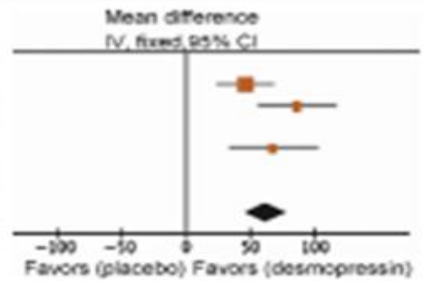
Study or subgroup	Desmopressin Mean	SD	Total	Placebo Mean	SD	Total	Weight (%)	Mean difference IV, fixed, 95% CI
Asplung 1999	−0.8	0.99	17	−0.2	1.1	17	15.4	−0.60 (−1.30, 0.1)]
Fu 2011	−1.5	1.28	39	−0.3	1.41	41	21.9	−1.20 (−1.79, −0.61)
Mattiasson 2002	−1.3	1.25	81	−0.5	1.75	62	28.8	−0.80 (−1.31, −0.29)
Rezakhanina 2011[a]	−1	0	30	−0.2	0	30		Not estimable
Van Kerrebroeck 2007	−1.25	1.35	59	−0.4	1.29	61	34.4	−0.85 (1.32, −0.38)
Wang 2011[b]	−1.5	0	57	−0.8	0	58		Not estimable
Total (95% CI)			283			269	100	−0.87 (−1.15, −0.60)
Heterogeneity: $\chi^2 = 1.85$, df = 3 ($p = 0.60$); $I^2 = 0\%$								
Test for overall effect: Z = 6.21 ($p < 0.00001$)								



CI = confidence interval; df = difference; SD = standard deviation.
[a] No standard deviation values.
[b] No standard deviation values.

Table 2 – Effect of desmopressin (with dose titrated against response) on hours of undisturbed sleep

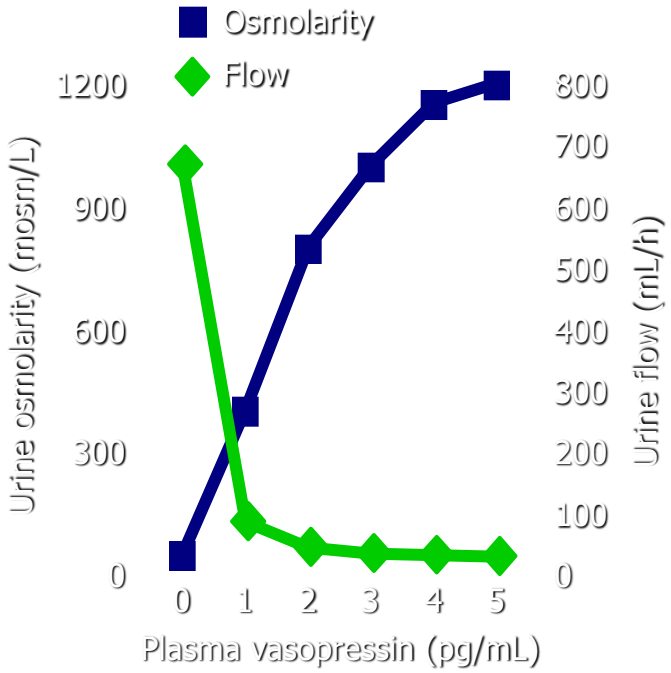
Study or subgroup	Desmopressin Mean	SD	Total	Placebo Mean	SD	Total	Weight (%)	Mean difference IV, fixed, 95% CI
Asplung 1999[a]	102	0	17	18	0	17		Not estimable
Fu 2011	69.6	52.798	39	23.7	50.434	41	50.9	45.90 (23.25, 68.55)
Mattiasson 2002	110.4	102.71	81	24	84.483	62	27.7	86.40 (55.70, 117.10)
Rezakhanina 2011[b]	120	0	30	30	0	30		Not estimable
Van Kerrebroeck 2007	108	106.5236	59	40	87.055	61	21.5	68.00 (33.13, 102.87)
Wang 2011[b]	23	0	57	3	0	58		Not estimable
Total (95% CI)			283			269	100	61.85 (45.70, 78.00)
Heterogeneity: $\chi^2 = 4.48$, df = 2 ($p = 0.11$); $I^2 = 55\%$								
Test for overall effect: Z = 7.51 ($p < 0.00001$)								



CI = confidence interval; df = difference; SD = standard deviation.
[a] No standard deviation values.
[b] No standard deviation values.

Δεσμοπρεσσίνη

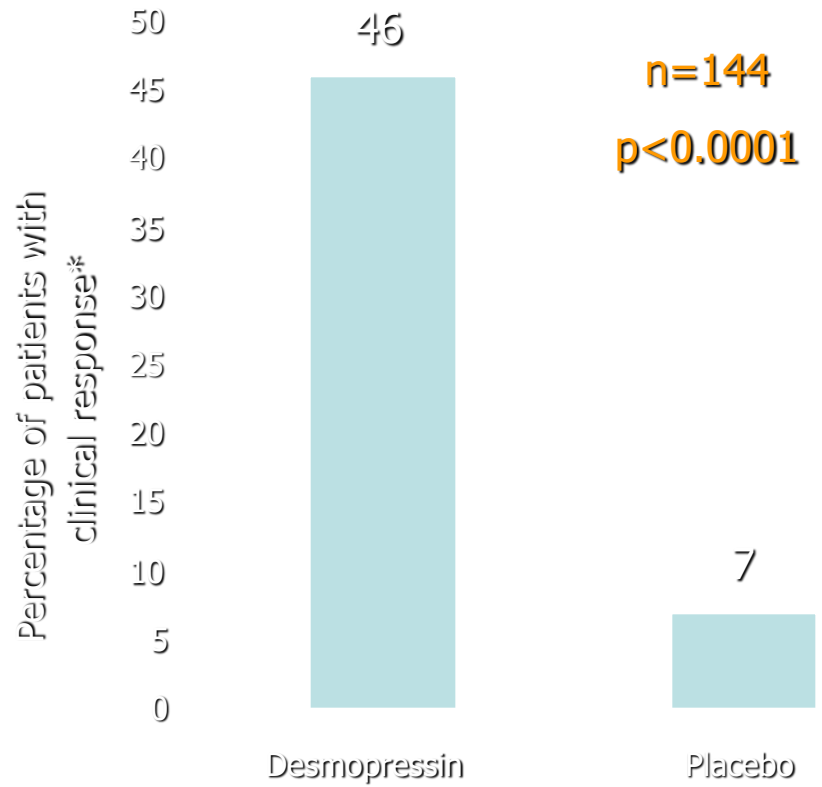
- δομικό ανάλογο της φυσιολογικής αντιδιουρητικής ορμόνης βαζοπρεσσίνης
- Μη δράση στους V_1
- Μεγλύτερη δράση στους νεφρικούς V_2 υποδοχείς από την βασοπρεσσίνη
- Αυξάνει την επαναπορρόφηση ύδατος, την συγκέντρωση των ούρων και μειώνη την παραγωγή ούρων



Nørgaard et al. *Neurourol Urodyn* 2007 00:1–8
Adapted from Figure 1, page 8 of Robertson and Norgaard. *BJU Int* 2002;90:7–10 with permission of Blackwell Publishing Ltd.

Βελτίωση νυκτουρίας στις γυναίκες

3-week double-blind placebo-controlled study of desmopressin treatment in women with nocturia



- Mean reduction in number of voids from baseline:
  2.9 to 1.6 with desmopressin
  2.9 to 2.4 with placebo
- Significant reduction in bother (p=0.01)

*Clinical response defined as ≥50% reduction in mean number of nocturnal voids

Lose et al. *Am J Obstet Gynecol* 2003;189:1106–1113

EAU Guidelines on

Management of Non-Neurogenic Male Lower Urinary Tract Symptoms (LUTS), incl. Benign Prostatic Obstruction (BPO)

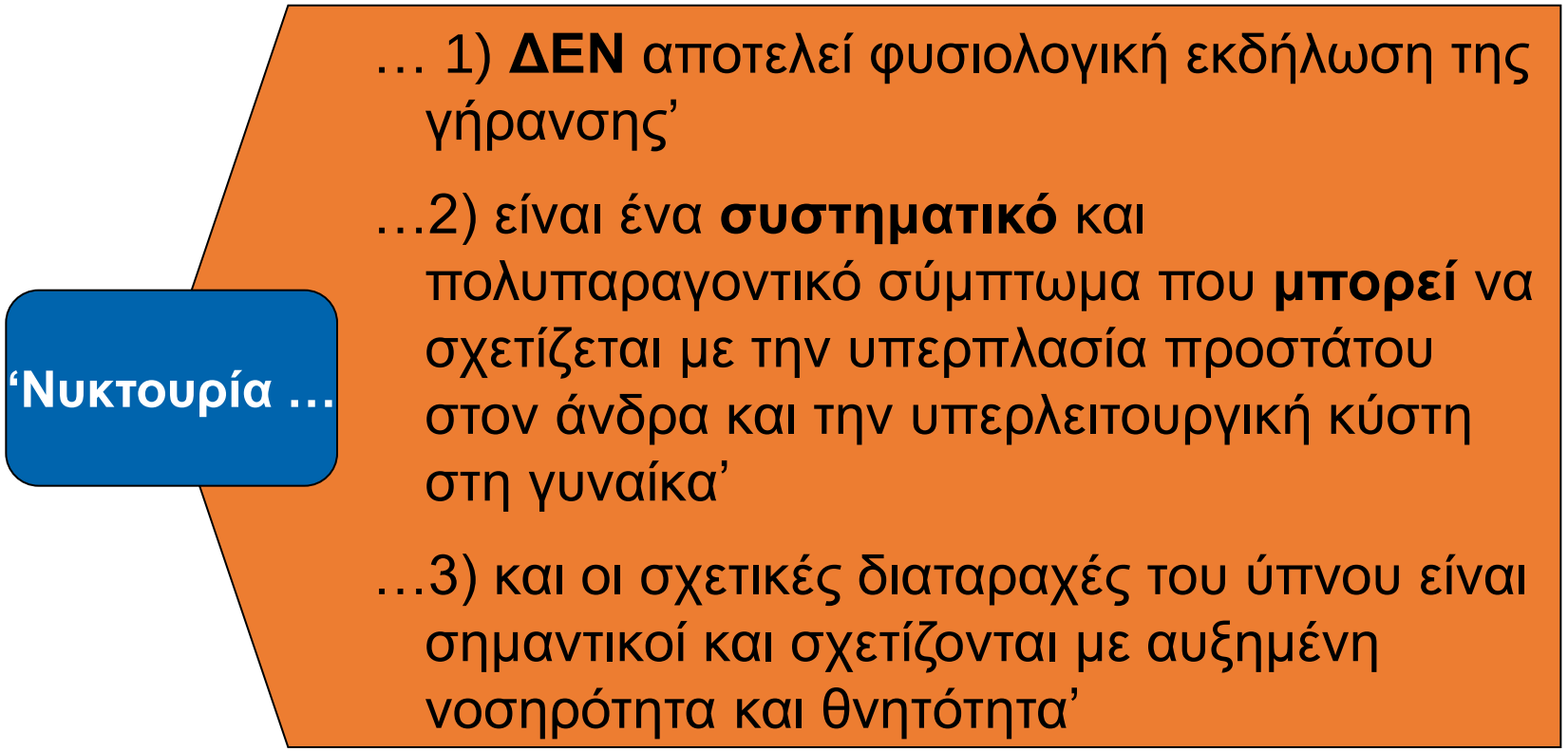
S. Gravas (Chair), J.N. Cornu, M.J. Drake, M. Gacci, C. Gratzke, T.R.W. Herrmann, S. Madersbacher, C. Mamoulakis, K.A.O. Tikkinen

Guidelines Associates: M. Karavitakis, I. Kyriazis, S. Malde, V. Sakkalis, R. Umbach

European Association of Urology

Recommendations	Strength rating
Treat underlying causes of nocturia, including behavioural, systemic condition(s), sleep disorders, lower urinary tract dysfunction, or a combination of factors.	Weak
Discuss behavioural changes with the patient to reduce nocturnal urine volume and episodes of nocturia, and improve sleep quality.	Weak
Offer desmopressin to decrease nocturia due to nocturnal polyuria in men < 65. Screen for hyponatremia at baseline, during dose titration and during treatment.	Strong
Offer α1-adrenergic antagonists for treating nocturia in men who have nocturia associated with LUTS.	Weak
Offer antimuscarinic drugs for treating nocturia in men who have nocturia associated with overactive bladder.	Weak
Offer 5α-reductase inhibitors for treating nocturia in men who have nocturia associated with LUTS and an enlarged prostate (> 40 mL).	Weak
Do not offer phosphodiesterase type 5 inhibitors for the treatment of nocturia.	Weak

Αλήθειες σχετικά με την νυκτουρία….



σας ευχαριστώ για την

σας