

# EAU GUIDELINES ON NON-NEUROGENIC MALE LOWER URINARY TRACT SYMPTOMS (LUTS)

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J.N. Cornu (Chair), D. Elterman, H. Hashim, T.R.W. Herrmann, M. Karavitakis, S. Malde, C. Netsch, C. De Nunzio, M. Rieken, V. Sakalis, M. Tutolo

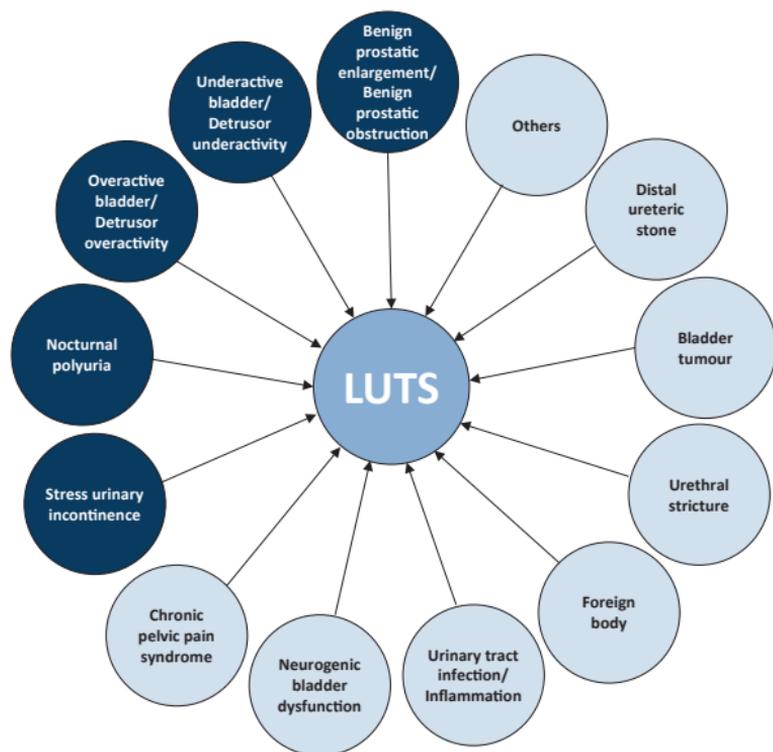
Guidelines Associates: M. Baboudjian, M. Creta, M.B. Duran, L. Moris, N. Pyrgidis

Guidelines Office: N. Schouten

## Introduction

The European Association of Urology (EAU) Guidelines on Male LUTS is a symptom-orientated guideline that mainly reviews LUTS secondary to benign prostatic obstruction (BPO), detrusor overactivity/overactive bladder and nocturnal polyuria in men  $\geq 40$  years. The multifactorial aetiology of LUTS is illustrated in Figure 1.

**Figure 1: Causes of male LUTS**



## Diagnostic Evaluation

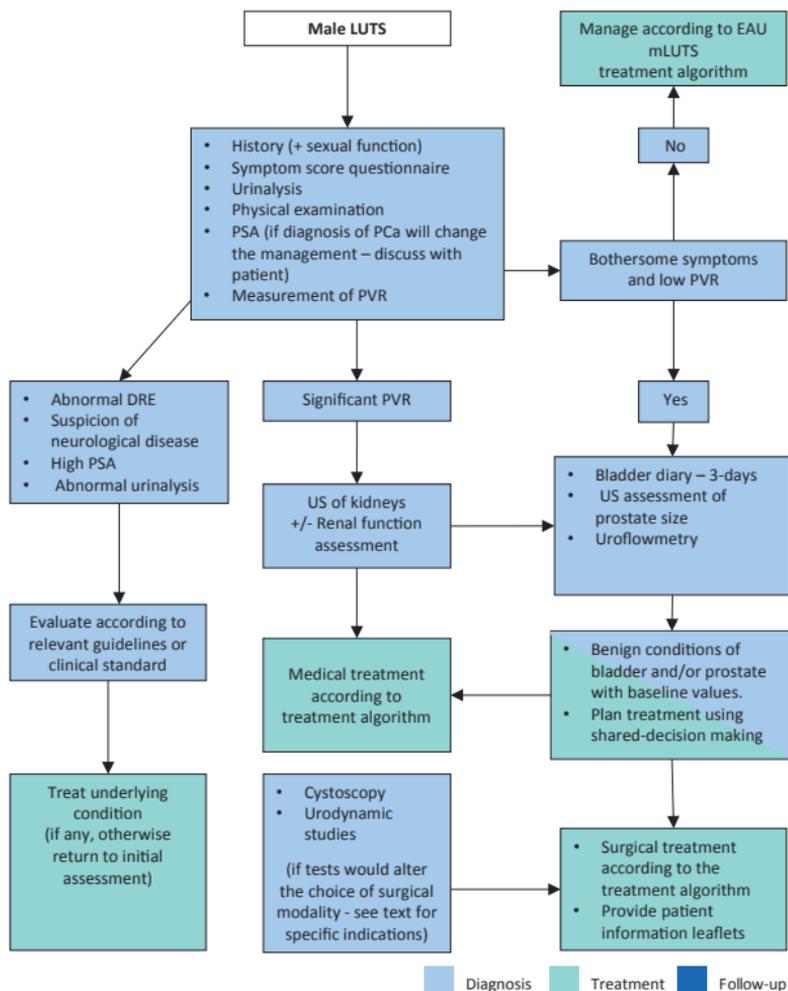
The high prevalence and the underlying multifactorial pathophysiology of male LUTS mean that an accurate assessment of LUTS is critical to provide best evidence-based care. Clinical assessment of LUTS aims to differentially diagnose and to define the clinical profile. A practical algorithm has been developed (Figure 2).

<b>Recommendations for the diagnostic evaluation of male LUTS</b>	<b>Strength rating</b>
Take a complete medical and surgical history from men with LUTS.	Strong
Use a validated symptom score questionnaire, including bother and quality of life assessment, during the initial assessment of male LUTS and for re-evaluation during and/or after treatment.	Strong
Use a bladder diary to assess male LUTS, particularly for nocturia.	Strong
Have the patient complete a bladder diary for at least three days.	Strong
Perform a physical examination, including digital rectal examination, in the assessment of male LUTS.	Strong
<b><i>Urinalysis and prostate-specific antigen</i></b>	
Use urinalysis (by dipstick or microscopy) in the assessment of male LUTS.	Strong
Measure prostate-specific antigen (PSA) if a diagnosis of prostate cancer will change management.	Strong
Measure PSA if it assists in the treatment and/or decision-making process.	Strong
Counsel patients about PSA testing and the implications of a raised PSA test.	Strong
<b><i>Renal function, post-void residual and uroflowmetry</i></b>	
Assess renal function if renal impairment is suspected based on history and clinical examination, or in the presence of hydronephrosis, or when considering surgical treatment for male LUTS.	Strong

Measure post-void residual in the assessment of male LUTS.	Strong
Perform uroflowmetry in the initial assessment of male LUTS.	Weak
Perform uroflowmetry prior to medical or invasive treatment.	Strong
<b>Imaging and urethrocytoscopy</b>	
Perform ultrasound of the upper urinary tract in men with LUTS.	Weak
Perform imaging of the prostate when considering medical treatment for male LUTS, if this assists in the choice of the appropriate drug.	Weak
Perform imaging of the prostate when considering surgical treatment.	Strong
Perform urethrocytoscopy in men with LUTS if the findings may change diagnosis or treatment.	Weak
<b>Pressure-flow studies</b>	
Perform urodynamics (UDS) only in individual patients for specific indications prior to invasive treatment or when further evaluation of the underlying pathophysiology of LUTS is warranted.	Weak
Perform UDS in men who have had previous unsuccessful (invasive) treatment for LUTS prior to further invasive treatment.	Weak
Perform UDS in men considering invasive treatment who cannot void > 150 mL.	Weak
Perform UDS when considering surgery in men with bothersome predominantly voiding LUTS and $Q_{\max} > 10$ mL/s.	Weak

Perform UDS when considering invasive treatment in men with bothersome, predominantly voiding LUTS aged > 80 years.	Weak
Perform UDS when considering invasive treatment in men with bothersome, predominantly voiding LUTS aged < 50 years.	Weak
<b><i>Non-invasive tests in diagnosing bladder outlet obstruction</i></b>	
Do not offer non-invasive tests as an alternative to urodynamics/pressure-flow studies for diagnosing bladder outflow obstruction in men.	Strong

**Figure 2: Assessment algorithm of LUTS in men aged 40 years or older**



DRE = digital rectal examination; EAU = European Association of Urology; FVC = frequency volume chart; LUTS = lower urinary tract symptoms; PCa = prostate cancer; PSA = prostate-specific antigen; PVR = post-void residual; US = ultrasound.

Note: Readers are strongly recommended to read the full text EAU Guidelines that highlights the current position of each test in detail.

## Disease Management

### Conservative and pharmacological treatment

Watchful waiting is suitable for mild-to-moderate uncomplicated LUTS. It includes education, reassurance, lifestyle advice, and periodic monitoring.

<b>Recommendations for the conservative and pharmacological management of male LUTS</b>	<b>Strength rating</b>
<b><i>Conservative management</i></b>	
Offer watchful waiting to men with mild/moderate LUTS who are minimally bothered by their symptoms.	Strong
Offer men with LUTS lifestyle advice and self-care information prior to, or concurrent with, treatment.	Strong
<b><i>Pharmacological management</i></b>	
Offer $\alpha$ 1-blockers to men with moderate-to-severe LUTS.	Strong
Use 5 $\alpha$ -reductase inhibitors (5-ARIs) in men who have moderate-to-severe LUTS and an increased risk of LUTS progression (e.g., prostate volume > 40 mL).	Strong
Counsel patients about the slow onset of action and side effects of 5-ARIs.	Strong

Use muscarinic receptor antagonists in men with moderate-to-severe LUTS who mainly have bladder storage symptoms.	Strong
Do not use antimuscarinic overactive bladder medications in men with a post-void residual (PVR) volume > 150 mL.	Weak
Use $\beta_3$ agonists in men with moderate-to-severe LUTS.	Strong
Use phosphodiesterase type 5 inhibitors (PDE5I) in men with moderate-to-severe LUTS with or without erectile dysfunction.	Strong
Offer hexane extracted <i>Serenoa repens</i> to men with LUTS who want to avoid any potential adverse events related in particular to sexual function.	Weak
Inform the patient that the magnitude of efficacy may be modest with hexane extracted <i>Serenoa repens</i> .	Strong
Offer combination treatment with an $\alpha$ 1-blocker and a 5-ARIs to men with moderate-to-severe LUTS and an increased risk of disease progression (e.g., prostate volume > 40 mL).	Strong
Use combination treatment of a $\alpha$ 1-blocker with a muscarinic receptor antagonist in patients with moderate-to-severe LUTS if relief of storage symptoms has been insufficient with monotherapy with either drug.	Weak
Do not prescribe combination treatment in men with a PVR volume > 150 mL.	Weak

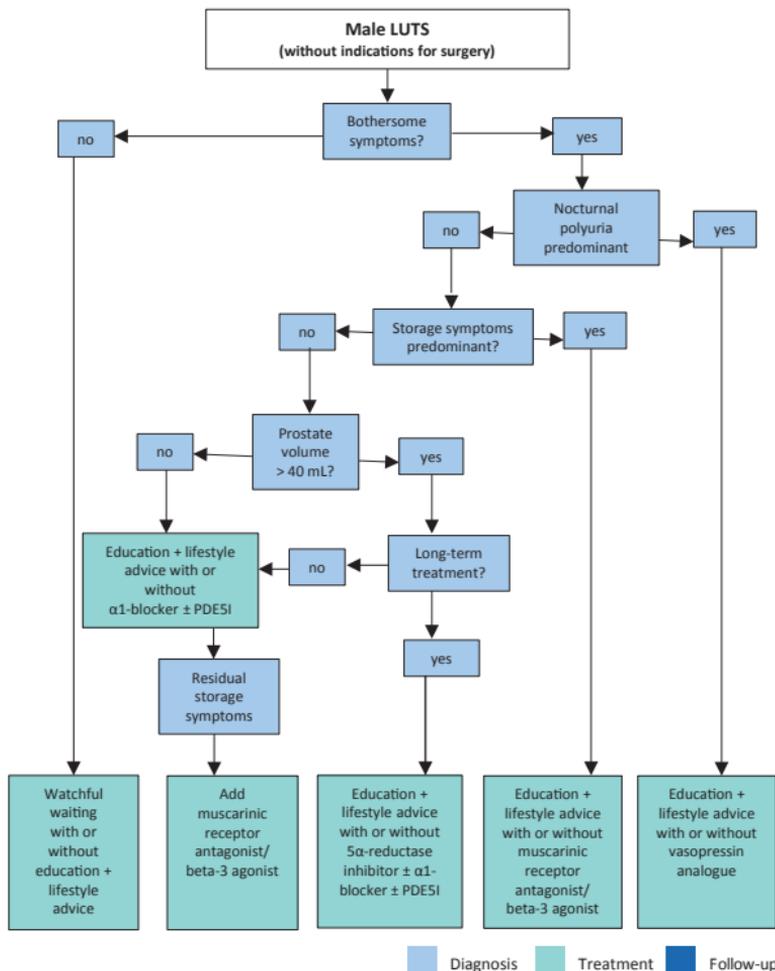
Use combination treatment of a $\alpha$ 1-blocker with $\beta_3$ agonists in patients with persistent storage LUTS after treatment with $\alpha$ 1-blockers monotherapy.	Weak
Use combination treatment of $\alpha$ 1-blockers + PDE5I in patients with bothersome LUTS, particularly in patients willing to improve their erectile function.	Weak
Inform the patient that the magnitude of the effect is modest.	Weak

### Summary conservative and/or medical treatment

The first choice of therapy is behavioural modification, with or without pharmacological treatment. A flowchart illustrating conservative and pharmacological treatment choices according to evidence-based medicine and patients' profiles is provided in Figure 3.

### Figure 3: Treatment algorithm of male LUTS using medical and/or conservative treatment options

Treatment decisions depend on results assessed during initial evaluation. Note that patients' preferences may result in different treatment decisions.



*α1-blocker = alpha-1 adrenergic receptor blocker;  
5α-reductase inhibitor = 5-alpha-reductase inhibitor;  
LUTS = lower urinary tract symptoms; PDE5I =  
phosphodiesterase type 5 inhibitor.*

*Note: Readers are strongly recommended to read the full text EAU Guidelines that highlights the current position of each treatment in detail.*

Ultimately, shared decision-making and patient counselling should accompany all therapeutic choices, ensuring that patients have realistic expectations and are aware of potential risks, possible complications, need for reintervention, and expected outcomes.

### **Surgical treatment**

Prostate surgery is usually required when patients have experienced recurrent or refractory urinary retention, overflow incontinence, recurrent urinary tract infections, bladder stones or diverticula, treatment-resistant visible haematuria due to benign prostatic hyperplasia (BPH)/benign prostatic enlargement (BPE), or dilatation of the upper urinary tract due to BPO, with or without renal insufficiency (absolute operation indications, need for surgery). Surgery is usually needed when patients have had insufficient relief of LUTS or post-void residual after conservative or pharmacological treatments (relative operation indications). Surgical management is divided by surgical approach into: resection; enucleation; vaporisation; alternative ablative techniques; and non-ablative techniques.

## Recommendations for surgical treatment of male LUTS

<b>Recommendations for resection of the prostate</b>	<b>Strength rating</b>
Offer bipolar- or monopolar-transurethral resection of the prostate (TURP) to surgically treat moderate-to-severe LUTS in men with prostate size of 30-80 mL.	Strong
Offer laser vaporessection of the prostate using Tm:YAG laser (ThuVARP) as an alternative to TURP.	Weak
Offer transurethral incision of the prostate to surgically treat moderate-to-severe LUTS in men with prostate size < 30 mL, without a middle lobe.	Strong
<b><i>Recommendations for enucleation of the prostate</i></b>	
Offer open prostatectomy in the absence of anatomical endoscopic enucleation of the prostate to treat moderate-to-severe LUTS/benign prostatic obstruction (BPO) in men with prostate size > 80 mL.	Strong
Offer bipolar transurethral (plasmakinetic) enucleation of the prostate to men with moderate-to-severe LUTS/BPO as an alternative to TURP.	Weak
Offer laser enucleation of the prostate using Ho:YAG laser (HoLEP) to men with moderate-to-severe LUTS/BPO as an alternative to TURP or open prostatectomy.	Strong

Offer enucleation of the prostate using Tm:YAG laser (ThuLEP, ThuVEP) to men with moderate-to-severe LUTS/BPO as an alternative to TURP, holmium laser enucleation or bipolar transurethral (plasmakinetic) enucleation.	Weak
Offer Tm:YAG laser enucleation of the prostate to patients receiving anticoagulant or antiplatelet therapy.	Weak
<b><i>Recommendations for vaporisation of the prostate</i></b>	
Offer bipolar transurethral vaporisation of the prostate as an alternative to TURP to surgically treat moderate-to-severe LUTS/BPO in men with a prostate volume of 30-80 mL.	Weak
Offer 80-W 532 nm Potassium-Titanyl-Phosphate (KTP) laser vaporisation of the prostate to men with moderate-to-severe LUTS/BPO with a prostate volume of 30-80 mL as an alternative to TURP.	Strong
Offer 120-W 532 nm Lithium Borat (LBO) laser vaporisation of the prostate to men with moderate-to-severe LUTS/BPO with a prostate volume of 30-80 mL as an alternative to TURP.	Strong
Offer 180-W 532 nm LBO laser vaporisation of the prostate to men with moderate-to-severe LUTS/BPO with a prostate volume of 30-80 mL as an alternative to TURP.	Strong
Offer laser vaporisation of the prostate using 80-W KTP, 120- or 180-W LBO lasers for the treatment of patients receiving antiplatelet or anticoagulant therapy with a prostate volume < 80 mL.	Weak

<b>Recommendations for alternative ablative techniques</b>	
Offer Aquablation to patients with moderate-to-severe LUTS/BPO and a prostate volume of 30-80 mL as an alternative to TURP, particularly in patients interested in preserving ejaculatory function.	Strong
Offer prostatic artery embolisation (PAE)* to men with moderate-to-severe LUTS/BPO who wish to consider minimally invasive treatment options and accept less optimal outcomes compared with TURP.	Weak
Perform PAE* only in units where the work-up and follow-up is performed by urologists working collaboratively with trained interventional radiologists for the identification of PAE suitable patients.	Strong
<b>Recommendations for non-ablative techniques</b>	
Offer Prostatic urethral lift (Urolift®) to men with LUTS/BPO interested in preserving ejaculatory function, with prostates < 70 mL and no middle lobe.	Strong
Advise patients that retreatment rates are higher after prostatic urethral lift compared to TURP.	Weak
Do not offer intraprostatic Botulinum toxin-A injection treatment to patients with male LUTS/BPO**.	Strong

\* PAE remains under investigation.

\*\* Refer to previous editions of the EAU Guidelines for full rationale.

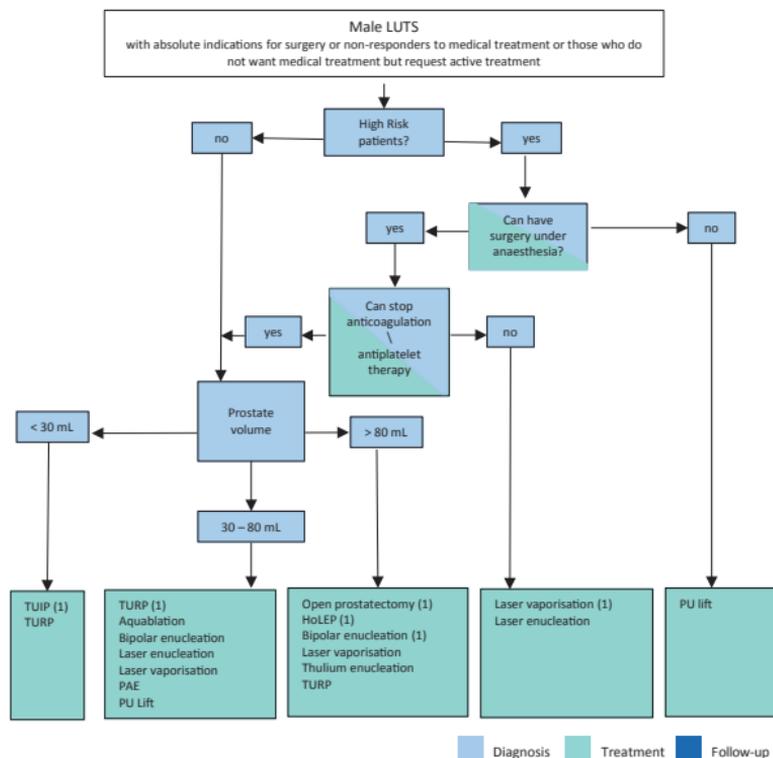
### **Summary surgical treatment**

The choice of the surgical technique depends on prostate size, co-morbidities, ability to undergo anaesthesia, patient's preference/willingness to accept surgery-associated side effects, availability of the surgical armamentarium, and experience of the surgeon.

Figure 4 illustrates surgical treatment choices according to the patient's profile.

**Figure 4: Treatment algorithm of bothersome LUTS refractory to conservative/medical treatment or in cases of absolute operation indications**

The flowchart is stratified by the patient's ability to have anaesthesia, cardiovascular risk, and prostate size.



*Laser vaporisation includes GreenLight, thulium and diode laser vaporisation; Laser enucleation includes holmium and thulium laser enucleation.*

*(1) Current standard/first choice. The alternative treatments are presented in alphabetical order.*

*HoLEP = holmium laser enucleation; LUTS = lower urinary tract symptoms; PAE = prostatic artery embolisation; PU = prostatic urethral; TUIP = transurethral incision of the prostate; TURP = transurethral resection of the prostate.*

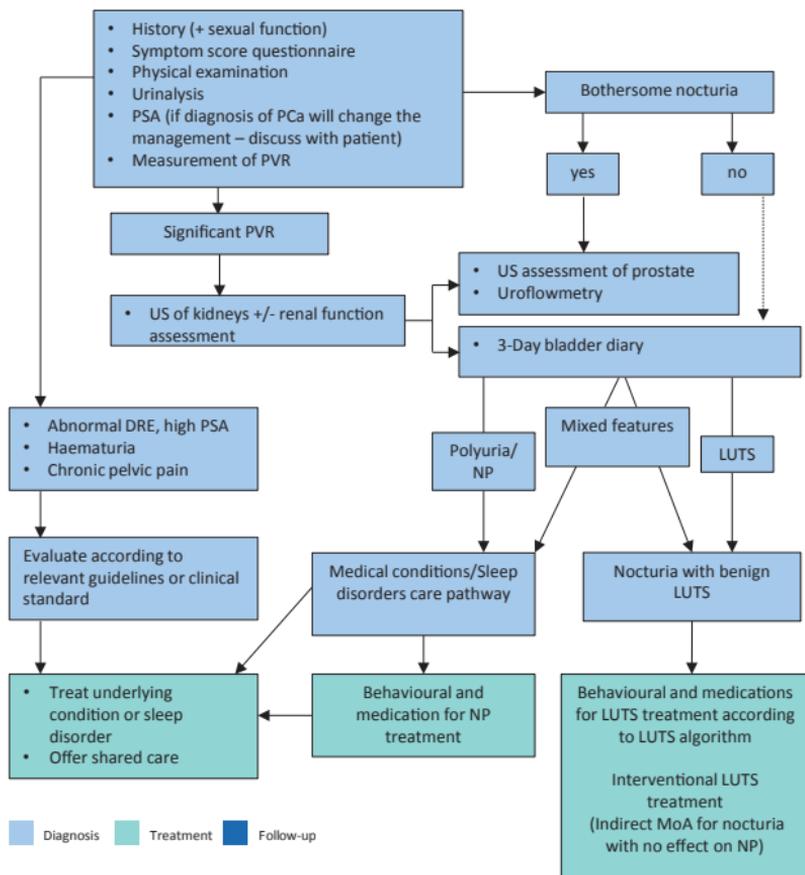
## **Management of Nocturia in Men with LUTS**

### **Diagnostic assessment**

Evaluation is outlined in Figure 5.

Assessment must establish whether the patient has 24-hour (global) polyuria, LUTS, a sleep disorder or a combination of these. Therapy may be driven by the bother it causes, but non bothersome nocturia may warrant assessment with a frequency/volume chart (indicated by the dotted line) depending on history and clinical examination since potential presence of a serious underlying medical condition must be considered.

**Figure 5: Evaluation of nocturia in non-neurogenic male LUTS**



*DRE = digital rectal examination; FVC = frequency volume chart; LUTS = lower urinary tract symptoms; MoA = mechanism of action; NP = nocturnal polyuria; PCa = prostate cancer; PVR = post-void residual; PSA = prostate-specific antigen; US = ultrasound.*

## Medical conditions and sleep disorders shared care pathway

**Table 1: Shared care pathway for nocturia, highlighting the need to manage potentially complex patients using relevant expertise for the causative factors**

<b>UROLOGICAL CONTRIBUTION</b>	<b>SHARED CARE</b>	<b>MEDICAL CONTRIBUTION</b>
<b>Diagnosis of LUTD</b> <ul style="list-style-type: none"><li>• Urological/ LUTS evaluation</li><li>• Nocturia symptom scores</li><li>• Bladder diary</li></ul>		<b>Diagnosis of conditions causing NP</b> <ul style="list-style-type: none"><li>• Evaluate patient's known conditions</li><li>• Screening for sleep disorders</li><li>• Screening for potential causes of polyuria*</li></ul>

<p><b>Conservative management</b></p> <p>Behavioural therapy</p> <ul style="list-style-type: none"> <li>• Fluid/sleep habits advice</li> <li>• Drugs for storage LUTS</li> <li>• Drugs for voiding LUTS</li> <li>• Increase exercise</li> <li>• IC/catheterisation</li> <li>• Leg elevation above heart level</li> <li>• Weight loss</li> </ul> <p><b>Interventional therapy</b></p> <ul style="list-style-type: none"> <li>• Therapy of refractory storage LUTS</li> <li>• Therapy of refractory voiding LUTS</li> </ul>	<p><b>Conservative management</b></p> <ul style="list-style-type: none"> <li>• Antidiuretic</li> <li>• Diuretics</li> <li>• Drugs to aid sleep</li> </ul>	<p><b>Management</b></p> <ul style="list-style-type: none"> <li>• Initiation of therapy for new diagnosis</li> <li>• Optimised therapy of known conditions</li> </ul> <p>* Potential causes of polyuria:</p> <p>NEPHROLOGICAL DISEASE</p> <ul style="list-style-type: none"> <li>• Tubular dysfunction</li> <li>• Global renal dysfunction</li> </ul> <p>CARDIOVASCULAR DISEASE</p> <ul style="list-style-type: none"> <li>• Cardiac disease</li> <li>• Vascular disease</li> </ul> <p>ENDOCRINE DISEASE</p> <ul style="list-style-type: none"> <li>• Diabetes insipidus/mellitus</li> <li>• Hormones affecting diuresis/natriuresis</li> </ul> <p>NEUROLOGICAL DISEASE</p> <ul style="list-style-type: none"> <li>• Pituitary and renal innervation</li> <li>• Autonomic dysfunction</li> </ul> <p>RESPIRATORY DISEASE</p> <ul style="list-style-type: none"> <li>• Obstructive sleep apnoea</li> </ul> <p>BIOCHEMICAL</p> <ul style="list-style-type: none"> <li>• Altered blood oncotic pressure</li> </ul>
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*IC = intermittent catheterisation; LUTD = Lower urinary tract dysfunction; LUTS = lower urinary tract symptoms; NP = nocturnal polyuria.*

<b>Recommendations for the treatment of nocturia</b>	<b>Strength rating</b>
Treat underlying causes of nocturia, including behavioural, systemic condition(s), sleep disorders (e.g., obstructive sleep apnoea), lower urinary tract dysfunction, or a combination of factors.	Strong
Discuss behavioural changes with the patient to reduce nocturnal urine volume and episodes of nocturia, and improve sleep quality.	Strong
Offer desmopressin to decrease nocturia due to nocturnal polyuria in men < 65 years of age.	Weak
Screen for hyponatremia at baseline, day three and day seven, one month after initiating therapy and periodically during treatment. Measure serum sodium more frequently in patients > 65 years of age and in patients at increased risk of hyponatremia.	Strong
Discuss with the patient the potential clinical benefit relative to the associated risks from the use of desmopressin, especially in men > 65 years of age.	Strong
Offer $\alpha$ 1-adrenergic antagonists for treating nocturia in men who have nocturia associated with voiding LUTS.	Weak
Offer antimuscarinic drugs for treating nocturia in men who have nocturia associated with overactive bladder.	Weak

Offer 5 $\alpha$ -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

### Management of Male Urinary Incontinence

Urinary incontinence (UI) is defined as an unintentional loss of urine and is reported to have a prevalence of 11% in men aged 60 to 64 years old, to 31% in men  $\geq$  85 years, and to affect up to 32% of men with LUTS. Urinary incontinence can be further classified into three types: stress urinary incontinence (SUI); urgency urinary incontinence (UUI); and mixed urinary incontinence (MUI).

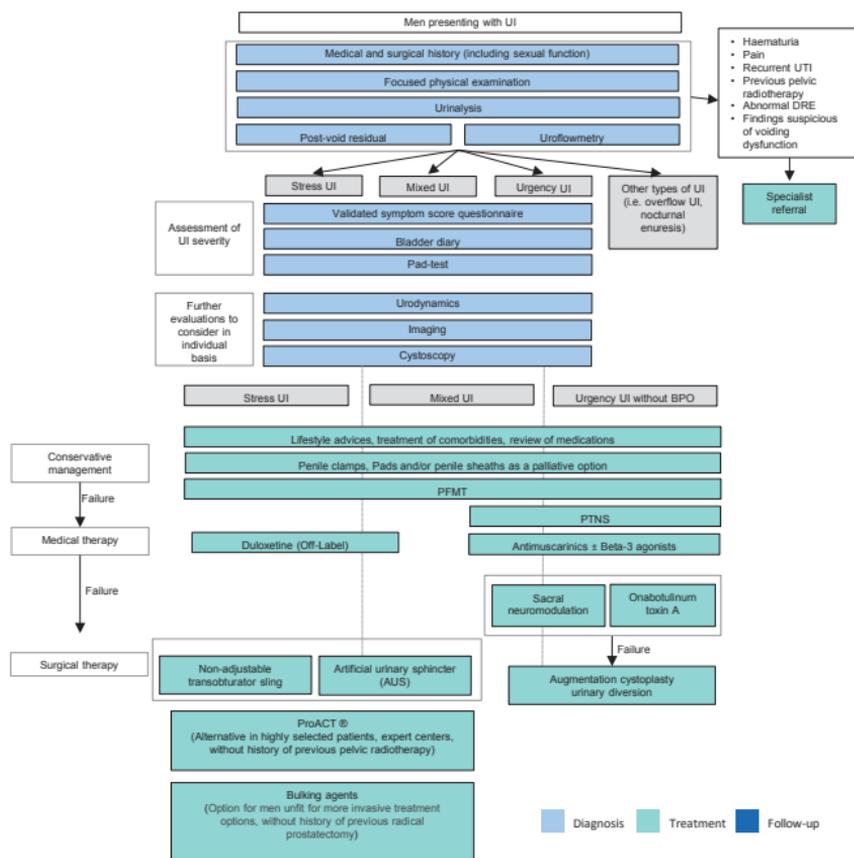
**Table 2: Epidemiology and pathophysiology overview of male urinary incontinence**

<i>Type</i>	<i>Definition</i>	<i>Causes and associated factors</i>	<i>Patho-physiology</i>	<i>Clinical presentation</i>
<b>Stress UI:</b> prevalence < 10%	Urine loss during movement, on efforts or in general during increased abdominal pressure.	<ul style="list-style-type: none"> <li>• BPO surgery</li> <li>• Neurogenic condition</li> <li>• Pelvic surgery</li> <li>• Radical prostatectomy</li> <li>• Urethral surgery</li> <li>• Pelvic radiation</li> </ul>	Sphincter deficiency	<p><b>Symptoms:</b> UI during physical activity, exercises, e.g., during coughing, sneezing, no leakage during sleep, no nocturnal enuresis</p> <p><b>Voiding diary/ Pad test:</b> with activity</p> <p><b>Cough stress test:</b> leakage can coincide with coughing</p>

<p><b>Urgency UI:</b> prevalence 40-80%</p>	<p>Urine loss concomitant or immediately following an urgency episode.</p>	<ul style="list-style-type: none"> <li>• Ageing process</li> <li>• Anorectal dysfunction/ GI disorders</li> <li>• Behavioural factors (fluid intake and caffeine consumption)</li> <li>• BPO</li> <li>• Idiopathic</li> <li>• Intrinsic bladder diseases (cystitis, fibrosis, interstitial cystitis)</li> <li>• Metabolic syndrome</li> <li>• Neurogenic conditions</li> <li>• UTIs</li> </ul>	<ul style="list-style-type: none"> <li>• Detrusor overactivity (neurogenic or not)</li> <li>• Urothelial irritation</li> <li>• Increased afferent signalling</li> <li>• Others (pelvic organ cross talk, bladder wall ischemia, etc.)</li> </ul>	<p><b>Symptoms:</b> urgency, usually associated with, increased frequency and nocturia</p> <p><b>Voiding diary:</b> urgency, frequency and nocturia, incontinence</p>
<p><b>Mixed UI:</b> prevalence 10-30%</p>	<p>Any combination of SUI and UUI.</p>	<p>Causes of both SIU and UUI</p>	<p>Combination of SUI and UUI</p>	<p><b>Symptoms:</b> UI on effort and with a sense of urgency</p> <p><b>Voiding diary:</b> variable</p> <p><b>Cough stress test:</b> may show leakage with coughing</p>

*BPO = benign prostatic obstruction; GI = gastrointestinal;  
SUI = stress urinary incontinence; UI = urinary incontinence;  
UTI = urinary tract infection; UUI = urgency urinary incontinence.*

**Figure 6: Evaluation and management of urinary incontinence in non-neurogenic male LUTS**



*BPO = benign prostatic obstruction; DRE = digital rectal examination; LUTS = lower urinary tract symptoms; PFMT = pelvic floor muscle training; PTNS = posterior tibial nerve stimulation; UI = urinary incontinence; UTI = urinary tract infection.*

## Recommendations for the diagnostic evaluation of male urinary incontinence

Recommendations	Strength rating
Take a complete medical history including symptoms and co-morbidities, medications, and a focused physical examination in the evaluation of men with urinary incontinence (UI).	Strong
Use a validated symptom score questionnaire, bladder diary and pad weight test to assess UI.	Strong
Measure post-void residual in the assessment of UI.	Strong
Perform invasive urodynamics for UI when considering invasive treatment.	Weak

## Recommendations for conservative treatment of male urinary incontinence

Recommendations for simple clinical interventions	Strength rating
Inform the patient that lifestyle modifications may improve urinary incontinence (UI); however, patients should be informed that the evidence for these interventions is lacking.	Strong
Review medical conditions and medication associated with the development or worsening of UI.	Weak
Discuss containment options (pads, sheaths, clamps) as a palliative option for the management of UI in a shared decision-making process.	Strong

<b>Recommendations for behavioural and physical therapies</b>	
Implement prompted voiding for patients with urinary incontinence (UI) where appropriate.	Strong
Offer bladder training as a complementary treatment for UI.	Strong
Offer pelvic floor muscle training alone or in combination with biofeedback and/or electrostimulation to men undergoing radical prostatectomy to speed recovery from UI.	Weak

### Recommendations for the pharmacological management of male urinary incontinence

<b>Recommendations</b>	<b>Strength rating</b>
Offer antimuscarinic drugs or $\beta_3$ agonists to adults with urgency urinary incontinence who failed conservative treatment.	Strong
Offer duloxetine to men with stress urinary incontinence.	Weak
Inform patients about the possible adverse events of duloxetine and that its use is off label for this indication in Europe.	Strong

### Recommendations for the surgical management of male urinary incontinence

<b>Recommendations for male slings</b>	<b>Strength rating</b>
Offer non-adjustable transobturator slings to men with mild-to-moderate post-prostatectomy stress urinary incontinence.	Weak

Inform men that severe incontinence, prior pelvic radiotherapy, or transurethral surgery may worsen the outcome of non-adjustable male sling surgery.	Weak
<b>Recommendations for compression devices</b>	
Offer artificial urinary sphincter (AUS) to men with moderate-to-severe stress urinary incontinence.	Strong
Implantation of AUS or ProACT <sup>®</sup> for men should only be offered in expert centres.	Weak
Warn men receiving AUS or ProACT <sup>®</sup> that, although cure can be achieved, there is a high risk of complications, mechanical failure and the need for explantation.	Strong
Do not offer non-circumferential compression device (ProACT <sup>®</sup> ) to men who have had pelvic radiotherapy.	Weak

### Recommendations for the surgical management of male urgency urinary incontinence

<b>Recommendations for bladder wall injection of botulinum toxin</b>	<b>Strength rating</b>
Offer bladder wall injections of onabotulinumtoxinA (100 U) to patients with overactive bladder (OAB)/urgency urinary incontinence (UUI) refractory to medical therapy.	Weak
Warn patients of the limited duration of response, risk of urinary tract infection and the possible prolonged need for intermittent catheterisation (ensure that they are willing and able to do so).	Strong

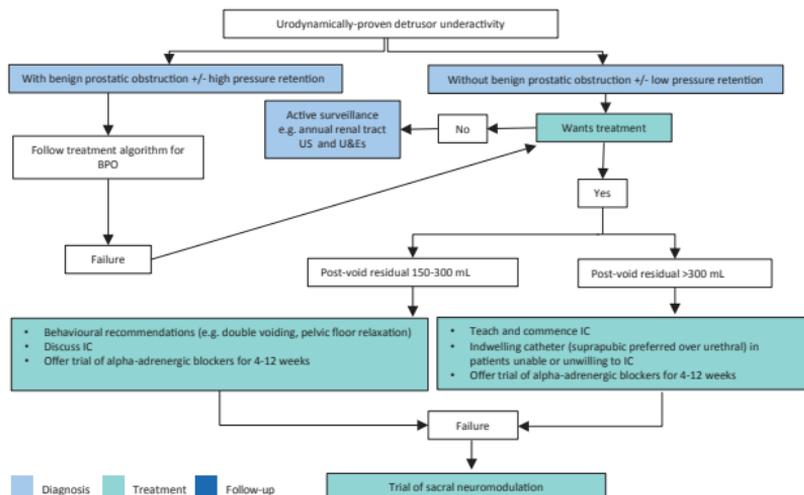
<b>Recommendation for sacral nerve stimulation</b>	
Offer sacral neuromodulation to patients who have UUI refractory to medical therapy and are willing to undergo surgical treatment.	Weak
<b>Recommendations for cystoplasty</b>	
Offer augmentation cystoplasty to patients with OAB/UUI who have failed all other treatment options and are able and willing to perform self-catheterisation.	Weak
Inform patients undergoing augmentation cystoplasty of the high risk of complications, the risk of having to perform intermittent catheterisation, and the need for life-long surveillance.	Strong
Offer urinary diversion only to patients who have failed less invasive therapies for the treatment of OAB/UUI, who will accept a stoma.	Weak

## Recommendations for the management of underactive bladder

<b>Recommendations</b>	<b>Strength rating</b>
Initiate intermittent catheterisation if there is risk of upper tract damage or post-void residual is > 300 mL.	Weak
Offer indwelling transurethral catheterisation or suprapubic cystostomy only when other modalities for urinary drainage have failed or are unsuitable.	Weak

Do not routinely recommend parasympathomimetics for treatment of men with underactive bladder.	Strong
Offer alpha-adrenergic blockers before more-invasive techniques.	Weak
Counsel patients with evidence of detrusor underactivity (DU), or acontractile detrusor and concomitant benign prostatic enlargement, about the potential subjective and objective benefits of benign prostatic surgery.	Weak
Offer men with DU and no benign prostatic obstruction test phase sacral neuromodulation.	Weak

**Figure 7: Management of Detrusor underactivity**



*Inform patients of the benefits and harms of each treatment, and of the lack of solid evidence of their efficacy prior to surgery.*

*Initial Assessment is as the EAU MLUTS guidelines algorithm. BPO = benign prostatic obstruction; IC = intermittent catheterisation; SNM = sacral neuromodulation; U&Es = urea and electrolytes; US = ultrasound.*

## Recommendations for the management of voiding dysfunction in young men

Recommendations for diagnostic evaluation	Strength rating
Suspect primary bladder neck obstruction (PBNO)/dysfunctional voiding (DV) in young men complaining of long-lasting LUTS.	Weak
Perform video urodynamics (VUDS) (or standard urodynamics with voiding cysto-urethrogram if VUDS unavailable) ± electromyography in young men with suspect PBNO or DV as initial diagnostic assessment or after failed first-line therapy.	Weak
<b>Recommendations for treatment</b>	
Consider alpha blockers as first-line treatment in young men with PBNO.	Weak
Consider behavioural modifications plus biofeedback as first-line therapy in young men with DV.	Weak
Consider bladder neck incision or intermittent catheterisation in well-informed young men with PBNO unresponsive to alpha-blockers.	Weak
Consider intermittent catheterisation in young men with DV unresponsive to behavioural modifications plus biofeedback.	Weak

## Follow-up

Recommended follow-up strategy:

- Patients managed with watchful waiting should be reviewed at six months and then annually, provided symptoms do not deteriorate or absolute indications develop for surgical treatment.
- Patients receiving  $\alpha$ 1-blockers, muscarinic receptor antagonists,  $\beta_3$  agonists, phosphodiesterase type 5 inhibitors, or a combination should be reviewed four to six weeks after drug initiation. If patients gain symptomatic relief without troublesome side effects, drug therapy may be continued. Patients should be reviewed at six months and then annually, provided symptoms do not deteriorate or absolute indications develop for surgical treatment.
- Patients receiving 5 $\alpha$ -reductase inhibitors should be reviewed after twelve weeks and then at six months to determine their response and adverse events.
- Patients receiving desmopressin: serum sodium concentration should be measured at day three and seven and after one month and, if serum sodium concentration has remained normal, every three months subsequently; the follow-up sequence should be restarted after dose escalation.
- Patients after prostate surgery should be reviewed four to six weeks after catheter removal to evaluate treatment response and side effects. If patients have symptomatic relief and there are no side effects, further assessment is not necessary.

<b>Recommendations for follow-up</b>	<b>Strength rating</b>
Follow-up all patients who receive conservative, medical or surgical management.	Weak
Define follow-up intervals and examinations according to the specific treatment.	Weak

*Readers are strongly recommended to read the full text EAU Guidelines where the efficacy, safety and considerations for each treatment are presented.*

*This short booklet text is based on the more comprehensive EAU Guidelines accessible on the website:  
<http://www.uroweb.org/guidelines>.*