

EAU GUIDELINES ON NON-NEUROGENIC MALE LUTS INCLUDING BENIGN PROSTATIC OBSTRUCTION

(Text update March 2017)

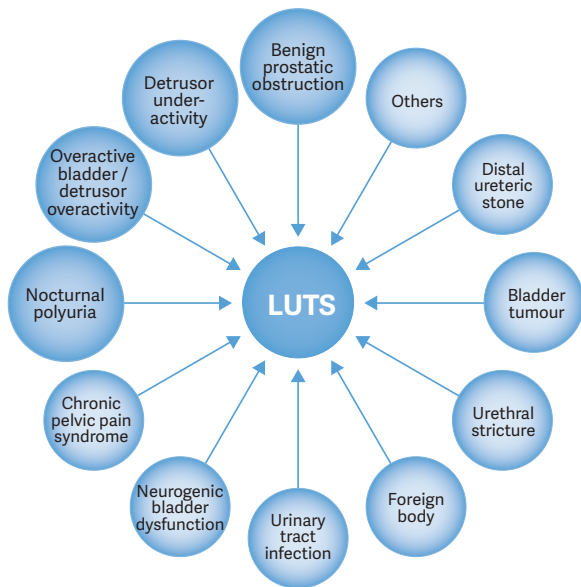
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Introduction

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

Figure 1: Causes of male lower urinary tract symptoms (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).

Recommendations for the diagnostic evaluation of male LUTS	LE	GR
Take a complete medical history from men with LUTS.	4	A*
Use a validated symptom score questionnaire including quality of life assessment during the assessment of male LUTS and for re-evaluation during and/or after treatment.	3	B
Use a bladder diary to assess male LUTS with a prominent storage component or nocturia.	3	B
Tell the patient to complete a bladder diary for the duration of at least three days.	2b	B
Perform physical examination including digital rectal examination in the assessment of male LUTS.	3	B
Use urinalysis (by dipstick or urinary sediment) in the assessment of male LUTS.	3	A*
Measure prostate-specific antigen if a diagnosis of prostate cancer will change management.	1b	A
Measure prostate-specific antigen if it assists in the treatment and/or decision-making process.	1b	A
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.	3	A*
Measure post-void residual in the assessment of male LUTS.	3	B
Uroflowmetry in the initial assessment of male LUTS may be performed and should be performed prior to any treatment.	2b	B

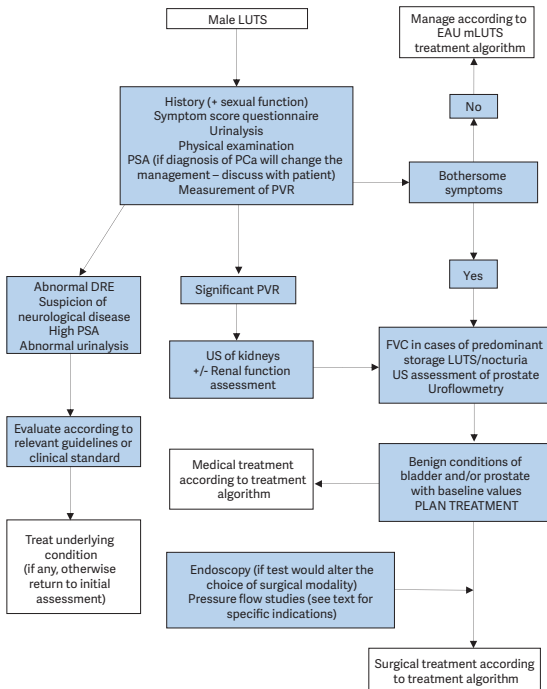
Perform ultrasound of the upper urinary tract in men with LUTS and a large post-void residual, or haematuria, or a history of urolithiasis.	3	B
Perform imaging of the prostate (either by transrectal or transabdominal ultrasound) when considering medical treatment for male LUTS, if it assists in the choice of the appropriate drug.	3	B
Perform imaging of the prostate (either by transrectal or transabdominal ultrasound) when considering surgical treatment.	3	B
Perform urethrocytostcopy in men with LUTS to exclude suspected bladder or urethral pathology and/or prior to minimally invasive/surgical therapies if the findings may change treatment.	3	B
Perform pressure-flow studies (PFS) only in individual patients with specific indications prior to invasive treatment or when evaluation of the underlying pathophysiology of LUTS is warranted.	3	B
Perform PFS in men who have had previously unsuccessful (invasive) treatment for LUTS.	3	B
When considering invasive treatment, PFS may be used for patients who cannot void > 150 mL.	3	C
When considering invasive treatment in men with bothersome voiding LUTS, PFS may be performed in men with a post-void residual > 300 mL.	3	C
When considering invasive treatment in men with bothersome, predominantly voiding LUTS, PFS may be performed in men aged > 80 years.	3	C

When considering invasive treatment in men with bothersome, predominantly voiding LUTS, perform PFS in men aged < 50 years.	3	B
None of the non-invasive tests in diagnosing bladder outlet obstruction in men with LUTS can currently be recommended as an alternative for PFS.	1a	B

**Upgraded based on Panel consensus.*

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

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



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

Disease Management

Conservative and pharmacological treatment

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

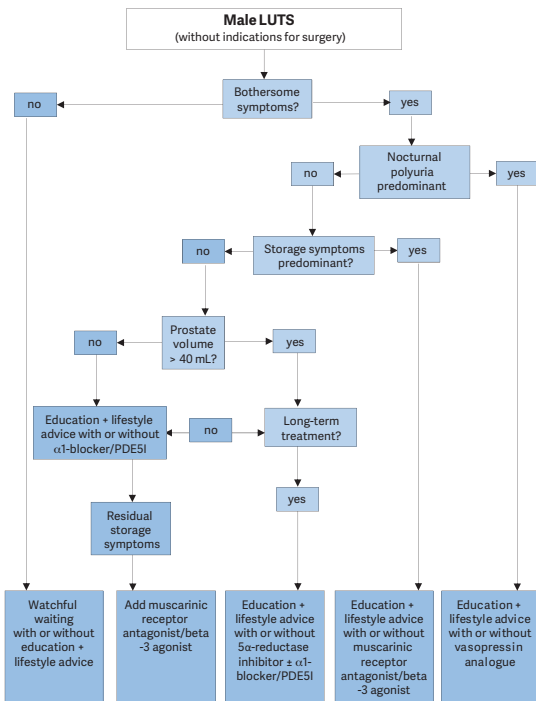
Recommendations for the conservative and pharmacological management of male LUTS.	LE	GR
Offer men with mild/moderate symptoms, minimally bothered by their symptoms, watchful waiting.	1b	A
Offer men with LUTS lifestyle advice prior to or concurrent with treatment.	1b	A
Offer α 1-blockers to men with moderate-to-severe LUTS.	1a	A
Counsel patients about the treatment related side effects associated with selective versus non-selective α -blockers.	1a	A
Use 5 α -reductase inhibitors in men who have moderate-to-severe LUTS and an enlarged prostate (> 40 mL).	1b	A
Counsel patients about the delayed symptom improvement with 5 α -reductase inhibitors.	1a	A
Use muscarinic receptor antagonists in men with moderate-to-severe LUTS who mainly have bladder storage symptoms.	1b	B
Prescribe antimuscarinics with caution in men with a post-void residual volume > 150 mL.	4	C
Use phosphodiesterase type 5 inhibitors in men with moderate-to-severe LUTS with or without erectile dysfunction.	1a	A

Use beta-3 agonists in men with moderate-to-severe LUTS who mainly have bladder storage symptoms.	1b	B
Use combination treatment of an α 1-blocker and 5 α -reductase inhibitor in men with moderate-to-severe LUTS and risk of disease progression (e.g. prostate volume > 40 mL).	1b	A
Use combination treatment of an α 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.	1b	B
Prescribe combination treatment with caution in men with a post-void residual volume > 150 mL.	2b	B

Summary conservative and/or medical treatment

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.



LUTS = lower urinary tract symptoms;

PDE5I = phosphodiesterase type 5 inhibitor.

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

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 macroscopic haematuria due to BPH/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 in LUTS or post-void residual after conservative or pharmacological treatments (relative operation indications).

Recommendations for surgical treatment of male LUTS	LE	GR
Offer transurethral incision of the prostate (TURP) to surgically treat moderate-to-severe LUTS in men with prostate size < 30 mL, without a middle lobe.	1a	A
Offer bipolar- or monopolar-TURP to surgically treat moderate-to-severe LUTS in men with prostate size of 30-80 mL.	1a	A
Offer endoscopic enucleation of the prostate or open prostatectomy to treat moderate-to-severe LUTS in men with prostate size > 80 mL.	1a	A
Transurethral microwave therapy achieves symptom improvement comparable with, TURP but transurethral microwave therapy is associated with decreased morbidity and lower flow improvements.	1a	A
Durability is in favour of TURP which has lower re-treatment rates compared to transurethral microwave therapy.	1a	A

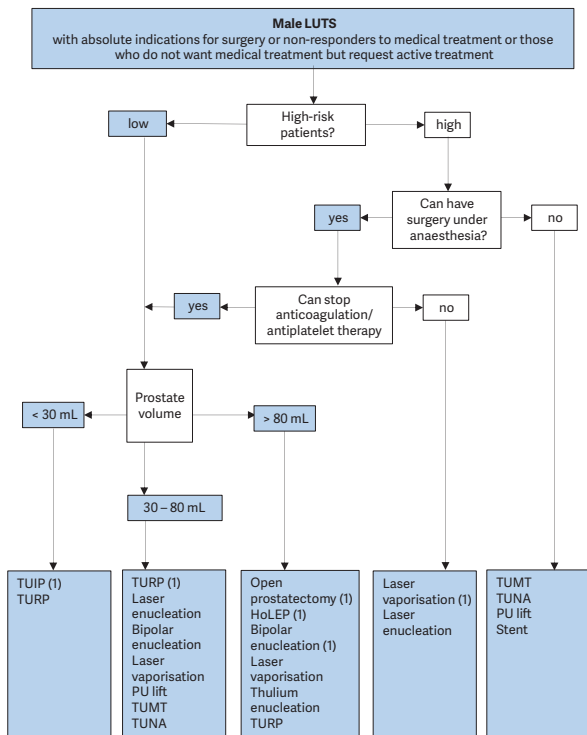
Transurethral needle ablation is a minimally invasive alternative with decreased morbidity compared to TURP but with less efficacy.	1a	A
Durability is in favour of TURP with lower retreatment rates compared to transurethral needle ablation.	1a	A
Holmium laser enucleation and 532-nm laser vaporisation of the prostate are alternatives to TURP in men with moderate-to-severe LUTS leading to immediate, objective, and subjective improvements comparable with TURP.	1a	A
The short- and mid-term functional results of 532-nm laser vaporisation of the prostate are comparable with TURP.	1b	A
The long-term functional results of holmium laser enucleation are comparable with TURP or open prostatectomy.	1b	A
Thulium enucleation may be an alternative to TURP and holmium laser enucleation in men with moderate-to-severe LUTS leading to immediate and mid-term objective and subjective improvements.	1b	A
Diode laser operations lead to short-term objective and subjective improvement.	1b	B
Tm:YAG vaporesection is an alternative to TURP for small- and medium-size prostates.	1b	A
With regard to intra-operative safety and haemostatic properties, diode and thulium lasers appear to be safe.	3	C
With regard to intra-operative safety, 532-nm laser vaporisation is superior to TURP.	1b	A

532-nm laser vaporisation should be considered in patients receiving anticoagulant medication or with a high cardiovascular risk.	3	B
Offer prostatic stents as an alternative to catheterisation for men unfit for surgery.	3	C
Offer Prostatic urethral lift (Urolift®) to men with LUTS interested in preserving ejaculatory function, with prostates < 70 mL and no middle lobe. Inform patients that long-term effects have not been evaluated.	1a	B

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



(1) Current standard/first choice. The alternative treatments are presented in alphabetical order. Notice: Readers are strongly recommended to read the full text that highlights the current position of each treatment in detail.

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

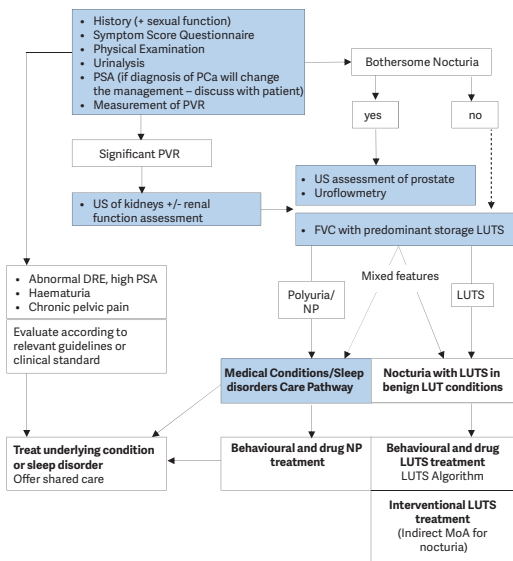
HoLEP = holmium laser enucleation; TUIP = transurethral incision of the prostate; TUMT = transurethral microwave therapy; TUNA = transurethral needle ablation; TURP = transurethral resection of the prostate.

Management of Nocturia in Men with LUTS

Diagnostic assessment

Evaluation is outlined in Figure 5.

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



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

DRE = digital rectal examination; NP = nocturnal polyuria;
MoA = mechanism of action; PVR = post-void residual.

Medical conditions and sleep disorders shared care pathway

Figure 6: Shared care pathway for nocturia, highlighting the need to manage potentially complex patients using relevant expertise for the causative factors.

UROLOGICAL CONTRIBUTION	SHARED CARE	MEDICAL CONTRIBUTION
<p>Diagnosis of LUTD</p> <ul style="list-style-type: none"> • Urological/LUTS evaluation • Nocturia symptom scores • Bladder diary 		<p>Diagnosis of conditions causing NP</p> <ul style="list-style-type: none"> • Evaluate patient's known conditions • Screening for sleep disorders • Screening for potential causes of polyuria*
<p>Conservative management</p> <p>Behavioural therapy</p> <ul style="list-style-type: none"> • Fluid/sleep habits advice • Drugs for storage LUTS • (Drugs for voiding LUTS) • ISC/catherisation 	<p>Conservative management</p> <ul style="list-style-type: none"> • Antidiuretic • Diuretics • Drugs to aid sleep 	<p>Management</p> <ul style="list-style-type: none"> • Initiation of therapy for new diagnosis • Optimised therapy of known conditions <p>* Potential causes of polyuria</p>
<p>Interventional therapy</p> <ul style="list-style-type: none"> • Therapy of refractory storage LUTS • Therapy of refractory voiding LUTS 		<p>NEPHROLOGICAL DISEASE</p> <ul style="list-style-type: none"> • Tubular dysfunction • Global renal dysfunction <p>CARDIOVASCULAR DISEASE</p> <ul style="list-style-type: none"> • Cardiac disease • Vascular disease <p>ENDOCRINE DISEASE</p> <ul style="list-style-type: none"> • Diabetes insipidus/mellitus • Hormones affecting diuresis/natriuresis <p>NEUROLOGICAL DISEASE</p> <ul style="list-style-type: none"> • Pituitary and renal innervation • Autonomic dysfunction <p>RESPIRATORY DISEASE</p> <ul style="list-style-type: none"> • Obstructive sleep apnoea <p>BIOCHEMICAL</p> <ul style="list-style-type: none"> • Altered blood oncotic pressure

Treatment for nocturia

Recommendations for treatment of nocturia	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*
Discuss lifestyle changes to reduce nocturnal urine volume and episodes of nocturia, and improve sleep quality.	3	A*
Desmopressin may be prescribed to decrease nocturia due to nocturnal polyuria in men < 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 LUTS.	1b	B
Antimuscarinic drugs may be offered to men with nocturia associated with overactive bladder.	1b	B
5 α -reductase inhibitors may be offered to men with nocturia who have moderate to severe LUTS and an enlarged prostate (> 40 mL).	1b	C
Do not offer phosphodiesterase 5 inhibitors 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

*Upgraded based on Panel consensus.

Follow-up

Recommended follow-up strategy:

- Patients 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 α 1-blockers, muscarinic receptor antagonists, beta-3 agonists, phosphodiesterase 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 α -reductase inhibitor should be reviewed after twelve weeks and 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.

Recommendations for follow-up of male LUTS	LE	GR
Follow-up for all conservative, medical, or operative treatment modalities is based on empirical data or theoretical considerations, but not on evidence-based studies.	3-4	C

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

This short booklet text is based on the more comprehensive EAU Guidelines (ISBN 978-90-79754-91-5), available to all members of the European Association of Urology at their website, <http://www.uroweb.org/guidelines>.