GUIDELINES ON NON-NEUROGENIC MALE LUTS INCLUDING BENIGN PROSTATIC OBSTRUCTION

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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 enlargement (BPE) or benign prostatic obstruction (BPO), detrusor overactivity or overactive bladder, and nocturia due to nocturnal polyuria in men ≥ 40 years. The multifactorial aetiology of LUTS is illustrated in Figure 1.

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

Diagnostic evaluation

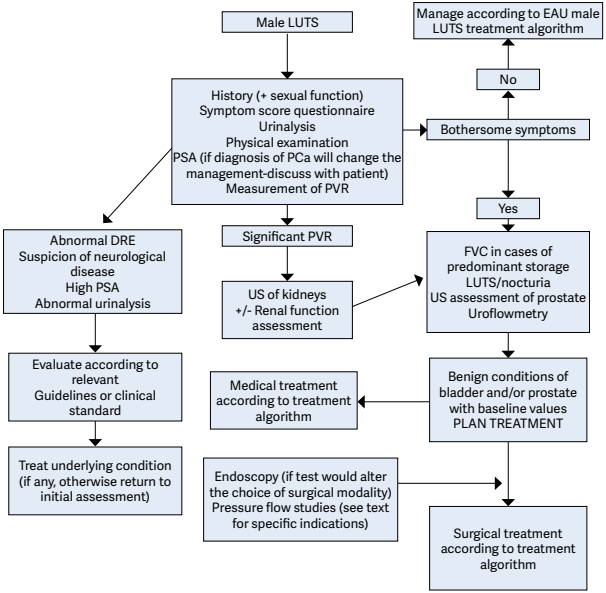
The high prevalence and the underlying multifactorial pathophysiology mean an accurate assessment of LUTS is critical to provide best evidence-based care. Clinical assessment of LUTS aims to differentially diagnose and to define the clinical profile. A practical algorithm has been developed (Figure 2).

Recommendations for the diagnostic evaluation of male LUTS	LE	GR
A medical history must always be taken from men with LUTS.	4	A*
A validated symptom score questionnaire with QoL question(s) should be used for the routine assessment of male LUTS in all patients and should be applied for re-evaluation of LUTS during treatment.	3	B
Micturition FVCs or bladder diaries should be used to assess male LUTS with a prominent storage component or nocturia.	3	B
FVCs should be performed for the duration of at least 3 days.	2b	B
Physical examination including DRE should be a routine part of the assessment of male LUTS.	3	B
Urinalysis (by dipstick or urinary sediment) must be used in the assessment of male LUTS.	3	A*
PSA measurement should be performed only if a diagnosis of PCa will change the management or if PSA can assist in decision-making in patients at risk of progression of BPE.	1b	A
Renal function assessment must be performed 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*
Measurement of PVR in male LUTS should be a routine part of the assessment.	3	B
Uroflowmetry in the initial assessment of male LUTS may be performed and should be performed prior to any treatment.	2b	B
Imaging of the upper urinary tract (with US) in men with LUTS should be performed in patients with a large PVR, haematuria or a history of urolithiasis.	3	B

When considering medical treatment for male LUTS, imaging of the prostate (either by TRUS or transabdominal US) should be performed if it assists the choice of the appropriate drug.	3	B
When considering surgical treatment, imaging of the prostate (either by TRUS or transabdominal US) should be performed.	3	B
Urethrocystoscopy should be performed 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
PFS should be performed only in individual patients for specific indications prior to surgery or when evaluation of the underlying pathophysiology of LUTS is warranted.	3	B
PFS should be performed in men who have had previous unsuccessful (invasive) treatment for LUTS.	3	B
When considering surgery, PFS may be used for patients who cannot void > 150 mL.	3	C
When considering surgery in men with bothersome, predominantly voiding LUTS, PFS may be performed in men with a PVR > 300 mL.	3	C
When considering surgery in men with bothersome, predominantly voiding LUTS, PFS may be performed in men aged > 80 years.	3	C
When considering surgery in men with bothersome, predominantly voiding LUTS, PFS should be performed in men aged < 50 years.	3	B

**Upgraded based on Panel consensus.*
BPE = benign prostatic enlargement; DRE = digital-rectal examination; FVC = frequency volume chart; LUTS = lower urinary tract symptoms; PCa = prostate cancer; PFS = pressure flow studies; PSA = prostate specific antigen; PVR = post-void residual; QoL = quality of life; TRUS = transrectal ultrasound; US = ultrasound.

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



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.

Treatment

Conservative treatment

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

Drug treatment

The level of evidence (LE) and the grade of recommendation (GR) for each treatment option are summarised below.

Recommendations for the conservative and medical treatment of male LUTS and follow-up	LE	GR
Men with mild symptoms are appropriate for watchful waiting.	1b	A
Men with LUTS should always be offered life-style advice prior to or concurrent with treatment.	1b	A
α_1-blockers can be offered to men with moderate-to-severe LUTS.	1a	A
5-ARIs can be offered to men who have moderate-to-severe LUTS and an enlarged prostate (> 40 mL).	1b	A
5-ARIs can prevent disease progression with regard to acute urinary retention and need for surgery.	1b	A
Muscarinic receptor antagonists may be used in men with moderate-to-severe LUTS who mainly have bladder storage symptoms. Caution is advised in men with BOO.	1b 4	B C
PDE5Is reduce moderate-to-severe (storage and voiding) LUTS in men with or without erectile dysfunction. Only tadalafil (5 mg once daily) has been licensed for the treatment of male LUTS in Europe.	1a	A
Vasopressin analogue can be used for the treatment of nocturia due to nocturnal polyuria.	1b	A

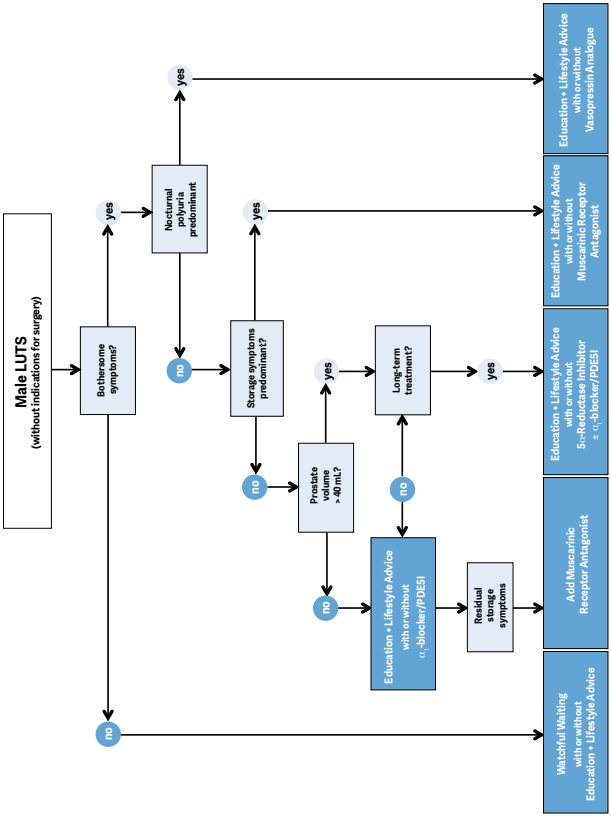
Combination treatment with an α_1-blocker together with a 5-ARI can be offered to men with bothersome moderate-to-severe LUTS, enlarged prostates, and reduced Q_{max} (men likely to develop disease progression).	1b	A
Combination treatment with an α_1-blocker together with a muscarinic receptor antagonist may be used in patients with bothersome moderate-to-severe LUTS if relief of storage symptoms has been insufficient with the monotherapy of either drug.	1b	B
Combination treatment should be prescribed with caution in men who may have BOO.	2b	B
Recommendations for emerging therapy		
Beta 3-agonists may be used in men with moderate-to-severe LUTS who have predominantly bladder storage symptoms.	1b	B

5-ARI = 5α reductase inhibitor; BOO = bladder outlet obstruction; LUTS = lower urinary tract symptoms; PDE5Is = phosphodiesterase type 5 inhibitors; Q_{max} = maximum urinary flow rate.

Summary conservative and/or medical treatment

First choice of therapy is behavioural modification, with or without medical treatment. A flowchart illustrating conservative and medical 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.



LUTS = lower urinary tract symptoms;
PDE5I = phosphodiesterase type 5 inhibitor.

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 PVR after conservative or medical treatments (relative operation indications).

Recommendations for surgical treatment of male LUTS	LE	GR
M-TURP is the current surgical standard procedure for men with prostate sizes of 30-80 mL and bothersome moderate-to-severe LUTS secondary of BPO. M-TURP provides subjective and objective improvement rates superior to medical or minimally invasive treatments.	1a	A
The morbidity of M-TURP is higher than for drugs or other minimally invasive procedures.	1a	A
B-TURP achieves short- and mid-term results comparable with M-TURP.	1a	A
B-TURP has a more favourable perioperative safety profile compared with M-TURP.	1a	A
TUIP is the surgical therapy of choice for men with prostate sizes < 30 mL, without a middle lobe, and bothersome moderate-to-severe LUTS secondary to BPO.	1a	A

Open prostatectomy or HoLEP are the first choice of surgical treatment in men with prostate sizes > 80 mL and bothersome moderate-to-severe LUTS secondary to BPO needing surgical treatment.	1b	A
Open prostatectomy is the most invasive surgical method with significant morbidity.	1b	A
TUMT and TUNA achieve symptom improvement comparable with TURP, but they are associated with decreased morbidity and lower flow improvements.	1a	A
Durability is in favour of TURP, which has lower re-treatment rates compared to TUMT or TUNA.	1a	A
HoLEP and 532-nm laser vaporisation of the prostate are alternatives to TURP in men with moderate-to-severe LUTS due to BPO leading to immediate, objective, and subjective improvements comparable with TURP.	1a	A
The intermediate-term functional results of 532-nm laser vaporisation of the prostate are comparable with TURP.	1b	A
The long-term functional results of HoLEP are comparable with TURP/open prostatectomy.	1b	A
Diode laser operations lead to short-term objective and subjective improvement.	1b	B
ThuVaRP is an alternative to TURP for small- and medium-size prostates.	1b	A
ThuVEP leads to short-term objective and subjective improvement.	3	C
With regard to intraoperative safety and haemostatic properties, diode and thulium lasers appear to be safe.	3	C

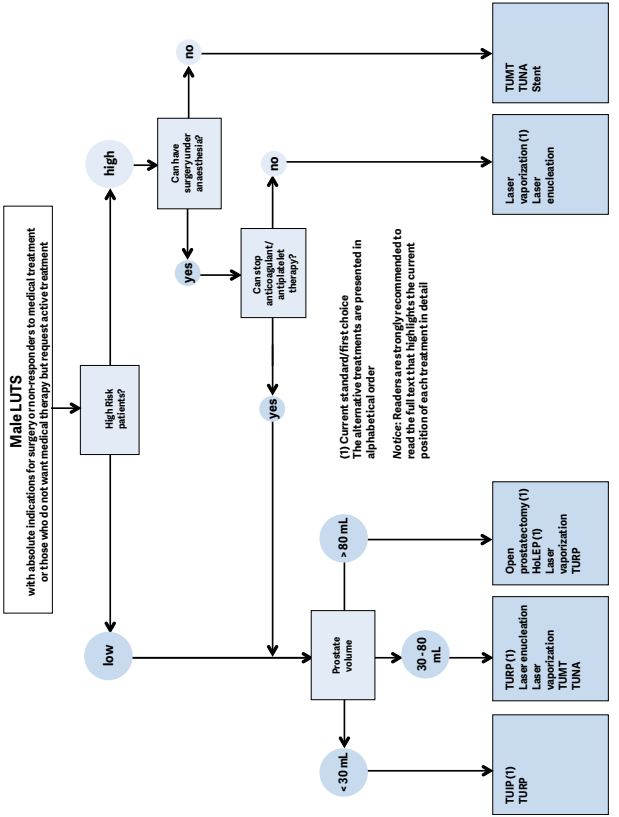
With regard to intraoperative safety, 532-nm laser vaporisation is superior to TURP.	1b	A
532-nm laser vaporisation should be considered in patients receiving anticoagulant medication or with a high cardiovascular risk.	3	B
Prostatic stents are an alternative to catheterisation for men unfit for surgery.	3	C
Recommendations for emerging therapies		
Intraprostatic ethanol injections for men with moderate-to-severe LUTS secondary to BPO are still experimental and should be performed only in clinical trials.	3	C
Intraprostatic BTX injections for men with bothersome moderate-to-severe LUTS secondary to BPO or men in urinary retention are still experimental and should be performed only in clinical trials.	3	C
MISP seems to be feasible in men with prostate sizes >80 mL needing surgical treatment. Since more data are required, MISP remains under evaluation.	3	C
Prostatic Urethral Lift (Urolift™) leads to short-term objective and subjective improvement. RCTs with longer follow-up are needed to confirm these initial promising results.	1b	B

BPO = benign prostatic obstruction; B-TURP = bipolar TURP; BTX = botulinum toxin; HoLEP = holmium laser enucleation; MISP= minimal invasive simple prostatectomy; M-TURP = monopolar TURP; RCT= randomised controlled trial; ThuVEP = Tm:YAG vapoenucleation; ThuVaRP = Tm:YAG vaporesection; TUIP = transurethral incision of the prostate; TUNA = transurethral needle ablation; TUMT = transurethral microwave therapy; TURP = trans-urethral resection of the prostate.

Summary surgical treatment

The choice of the surgical technique depends on prostate size, co-morbidities, ability to undergo anaesthesia, and 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 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.



Follow-up

Recommended follow-up strategy:

- Patients with watchful waiting should be reviewed at 6 months and then annually, provided symptoms do not deteriorate or absolute indications develop for surgical treatment.
- Patients receiving α_1-blockers, muscarinic receptor antagonists, PDE5Is, or a combination should be reviewed 4-6 weeks after drug initiation. If patients gain symptomatic relief, without troublesome side-effects, drug therapy may be continued. Patients should be reviewed at 6 months and then annually, provided symptoms do not deteriorate or absolute indications develop for surgical treatment.
- Patients receiving 5α-reductase inhibitor should be reviewed after 12 weeks and 6 months to determine their response and adverse events.
- Patients receiving desmopressin: serum sodium concentration should be measured at day 3 and 7 and after 1 month and, if serum sodium concentration has remained normal, every 3 months subsequently; the follow-up sequence should be re-started after dose escalation.
- Patients after prostate surgery should be reviewed 4-6 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 978-90-79754-80-9), available to all members of the European Association of Urology at their website, http://www.uroweb.org.