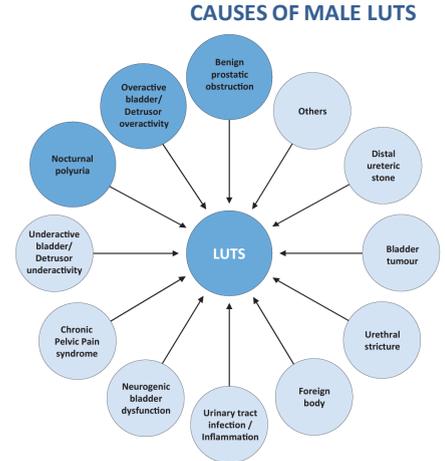


EPIDEMIOLOGY, AETIOLOGY, PATHOPHYSIOLOGY:

Lower urinary tract symptoms (LUTS) can be divided into storage, voiding and post-micturition symptoms. LUTS are strongly associated with ageing and a number of modifiable risk factors (e.g. metabolic syndrome).

LUTS have traditionally been related to bladder outlet obstruction (BOO), most frequently when histological benign prostatic hyperplasia (BPH) progresses through benign prostatic enlargement (BPE) to BPO. Increasing numbers of studies have shown that LUTS are often unrelated to the prostate. Bladder dysfunction may also cause LUTS, as well as other structural or functional abnormalities.



DIAGNOSTIC EVALUATION:

- Medical history:** A medical history aims to identify the potential causes and relevant comorbidities, including medical and neurological diseases.
- Symptom score questionnaires:** Sensitive to symptom changes. They can be used to monitor treatment and can quantify LUTS and identify which types of symptoms are predominant; however, they are not disease-, gender-, or age-specific.

Recommendation	Strength rating
Use a validated symptom score questionnaire including bother and quality of life assessment during the assessment of male LUTS and for re-evaluation during and/or after treatment.	Strong

- Frequency volume charts and bladder diaries:**
 - Frequency volume chart:** recording of volume and time of each void.
 - Bladder diary:** inclusion of additional information (fluid intake, use of pads, activities grades of symptom or bladder sensation).

Recommendations	Strength rating
Use a bladder diary to assess male LUTS with a prominent storage component or nocturia.	Strong
Tell the patient to complete a bladder diary for at least three days.	Strong

- Physical examination and digital-rectal examination:** examination is an integral part of a patient's medical evaluation. DRE can be used to assess prostate volume; however, the correlation is poor.

- Urinalysis:** Dipstick or sediment must be included in the primary evaluation and may indicate a UTI, proteinuria, haematuria or glycosuria requiring further assessment.

Recommendation	Strength rating
Use urinalysis (by dipstick or urinary sediment) in the assessment of male LUTS.	Strong

- Prostate-specific antigen (PSA):** has a good predictive value for assessing prostate volume and is a strong predictor of prostate growth. It can predict the risk of acute urinary retention (AUR) and surgery.

Recommendations	Strength rating
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

- Renal function measurement:** Patients with renal insufficiency are at an increased risk of developing post-operative complications.

Recommendation	Strength rating
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

- Uroflowmetry and Post-void residual (PVR) urine:** The diagnostic accuracy of uroflowmetry for detecting BOO varies considerably and is substantially influenced by threshold values. Specificity can be improved by repeated flow rate testing. **Monitoring of changes in PVR over time may allow for identification of patients at risk of AUR.**

Recommendations	Strength rating
Perform uroflowmetry in the initial assessment of male LUTS.	Weak
Perform uroflowmetry prior to medical or invasive treatment.	Strong

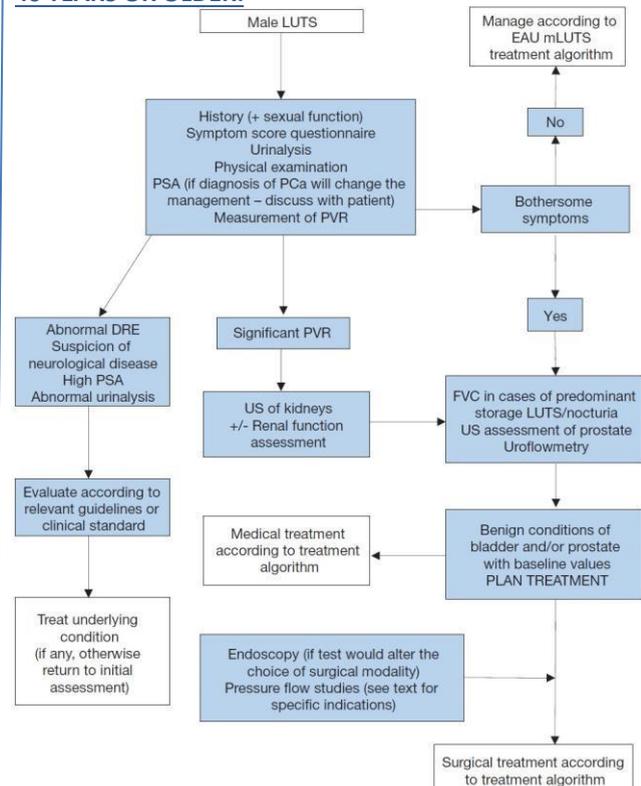
Recommendation	Strength rating
Measure post-void residual in the assessment of male LUTS.	Weak

- Imaging:**
 - Upper urinary tract:** Ultrasound can be used for the evaluation of men with large PVR, haematuria, or a history of urolithiasis.
 - Prostate:** Perform imaging of the prostate when considering medical treatment if it assists in the choice of the appropriate drug and when considering surgical treatment.

- Urethrocystoscopy:** Patients with a history of microscopic or gross haematuria, urethral stricture, or bladder cancer, who present with LUTS, should undergo urethrocystoscopy during diagnostic evaluation.

- Urodynamics:** Perform pressure-flow studies in individual patients for specific indications prior to invasive treatment or when further evaluation is warranted.

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.