FEMALE LOWER URINARY TRACT SYMPTOMS (LUTS)

THE AGA KHAN UNIVERSITY
AKU Manual Of Therapeutics

DEFINITION

LUTS may originate from the bladder, urethra, prostate (men) and/or adjacent pelvic floor or pelvic organs, or at times be referred from similarly innervated anatomy e.g., lower ureter.

- History and detailed examination
- Bladder diaries
- Patient questionnaires
- Urinalysis
- Uroflowmetry
- Ultrasound kidneys & urinary bladder Pre void and post void residual

EVALUATION

CAUSES

1. Urinary tract infection
2. Bladder and ureteric stones
3. Pelvic organ prolapse
4. Lower tract malignancies
5. Stress urinary incontinence
6. Overactive or underactive bladder or detrusor
7. Neurogenic bladder dysfunction
8. Deficiency of estrogen
9. Uterine myoma
10. Psychogenic and drug induced

SYMPTOMS AND SIGNS

1. Storage/Irritative Symptoms:
- Increased urinary frequency
- Nocturia
- Urge incontinence
- Stress urinary incontinence

2. Post micturition symptoms
- Post-void dribbling
- Feeling of incomplete bladder emptying

3. Voiding/Obstructive Symptoms:
- Hesitancy
- Intermittency and slow stream
- Straining, splitting or spraying of the urinary stream
- Terminal dribble

EXAMINATION

Abdominal examination: palpate bladder or other abdominal mass, digital examination of vagina, rectal examination

Examination of perineum: pelvic floor muscle (PFM) function, assessment of any associated POP.
Cough stress test to look for SUI,
Pelvic floor contraction strength can also be assessed digitally.

MANAGEMENT

Non-pharmacological

Lifestyle advice:
- Restricting fluid intake at specific times
- Restricting intake of caffeine or alcohol and smoking cessation.
- High fiber diet and seek treatment for constipation.
- Weight loss
- Pelvic floor muscle training

Pharmacological

Please refer to table of recommendations.

Adoloped from: Management of Non-neurogenic female Lower Urinary Tract Symptoms
EAU Guidelines. Edn. Presented at the EAU Annual Congress Milan 2021. ISBN 978-94-92671-13-4

Key to understanding level of evidence and strength of recommendation

Strength of recommendation
Strong Recommendation
Weak Recommendation

Level of Evidence			
1a	SR (with homogeneity*) of RCTs	2c	Outcomes" Research; Ecological studies
1b	Individual RCT (with narrow Confidence Interval	3a	SR (with homogeneity*) of case-control studies
1c	All or none	3b	Individual Case-Control Study
2a	SR (with homogeneity*) of cohort studies	4	Case-series (and poor quality cohort and case-control studies
2b	Individual cohort study (including low quality RCT; e.g., <80% follow-up)	5	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"

Table of Recommendations

History and examination	
Take a complete medical history including symptoms and comorbidities and a focused physical examination. *[Strong recommendation, level of evidence: 4]*	☐
Use a validated and appropriate questionnaire as part of the standardized assessment of female lower urinary tract symptoms. *[Strong recommendation, level of evidence: 3]*	☐
Bladder diaries	
Use **bladder diary** to assess LUTS with a prominent storage component or nocturia. *[Strong recommendation, level of evidence: 3]*	☐
Patient to complete a bladder diary for **at least three days.** *[Strong recommendation, level of evidence: 2b]*	☐
Urinalysis and urinary tract infection	
Perform **urinalysis** as a part of the **initial assessment** of a patient LUTS. *[Strong recommendation, level of evidence: 3]*	☐

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If a **urinary tract infection** is present with LUTS, **reassess** the patient after treatment. *[Strong recommendation, level of evidence: 3]*	☐
Do not routinely treat **asymptomatic bacteriuria** in elderly patients to improve urinary incontinence. *[Strong recommendation, level of evidence: 2]*	☐
Post-void residual volume (PVR)	
Measure PVR in patients with LUTS during initial assessment. *[Strong recommendation, level of evidence: 2]*	☐
Use **ultrasound** to measure PVR. *[Strong recommendation]*	☐
Monitor PVR in patients receiving treatments that may cause or worsen voiding dysfunction. *[Strong recommendation]*	☐
Provide **Bladder Voiding Efficiency** as an additional parameter when measuring PVR. *[Weak recommendation]*	☐
Urodynamics	
Adhere to **'Good Urodynamic Practice'** standards as described by International Continence Society when performing urodynamics in patients with LUTs. *[Strong recommendation, level of evidence: 1b]*	☐
Do not routinely carry out urodynamics when offering treatment for uncomplicated stress urinary incontinence. *[Strong recommendation, level of evidence: 1b]*	☐
Do not routinely carry out urodynamics when offering first-line treatment to patients with uncomplicated overactive bladder symptoms. *[Strong recommendation, level of evidence: 1a]*	☐
Perform urodynamics if findings may change choice of **invasive treatment.** *[Weak recommendation, level of evidence: 3]*	☐
Do not routinely carry out **imaging** of upper or lower urinary tract as part of assessment of lower urinary tract symptoms. *[Strong recommendation, level of evidence: 3]*	☐

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Do not use urethral pressure profilometry or leak point pressure to grade severity of urinary incontinence as they are primarily tests of urethral function. *[Strong recommendation, level of evidence: 3]*	☐
Disease management	
Overactive bladder (OAB)	
Request patients to complete at least a **three-day bladder diary** at **initial valuation** and **before** each **therapeutic intervention** for overactive bladder (OAB). *[Strong recommendation, level of evidence: 3]*	☐
Do not routinely carry out urodynamics when offering first-line treatment to patients with uncomplicated OAB symptoms. *[Strong recommendation, level of evidence: 1a]*	☐
Review any new **medication** associated with development or worsening of UI. *[Weak recommendation, level of evidence: 3]*	☐
Take a **history of current medication** use from all patients. *[Strong recommendation, level of evidence: 3]*	☐
Review any **new medication** associated with development or worsening of OAB symptoms. *[Weak recommendation, level of evidence: 3]*	☐
Ensure that **women and/or their carers** are **informed** regarding available treatment options before deciding on urinary containment alone. *[Strong recommendation]*	☐
Offer **incontinence pads and/or containment devices** for management of OAB-wet, either for temporary symptom control or where other treatments are not feasible. *[Strong recommendation level of evidence 3 1a]*	☐
Offer **prophylactic antibiotics** to patients with recurrent urinary tract infections who perform clean intermittent self-catheterisation, or have an indwelling catheter, after discussion regarding risk of increasing antimicrobial resistance. *[Strong recommendation level of evidence 1b]*	☐
Encourage **overweight and obese adults** with OAB/urinary incontinence to lose weight and maintain weight loss. *[Strong recommendation level of evidence 1b]*	☐

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Advise patients that **reducing caffeine** intake may improve symptoms of urgency and frequency, but not incontinence. *[Strong recommendation level of evidence 2]*	☐
Offer **prompted voiding** for adults with overactive bladder who are **cognitively impaired.** *[Strong recommendation level of evidence 1b]*	☐
Offer **bladder training** as a first-line therapy to adults with OAB/urgency urinary incontinence (UUI). *[Strong recommendation level of evidence 1b]*	☐
Ensure that **pelvic floor muscle training programmes** are as intensive as possible. *[Strong recommendation]*	☐
Offer **anticholineric drugs** to adults with overactive bladder (OAB) who fail conservative treatment. *[Strong recommendation level of evidence 1 a]*	☐
Consider **extended-release formulations** of anticholinergic drugs, whenever possible. *[Strong recommendation, level of evidence: 1b]*	☐
If an anticholinergic treatment proves ineffective, consider **dose escalation** or offering an **alternative** anticholinergic formulation, or mirabegron, or a combination. *[Strong recommendation, level of evidence: 1b]*	☐
Encourage **early review** (of efficacy and side effects) of patients on anticholinergic medication for OAB. *[Strong recommendation]*	☐
Offer **mirabegron** as an alternative to anticholinergics to **women** with overactive bladder who fail conservative treatment. *[Strong recommendation level of evidence 1 a]*	☐
Long-term anticholinergic treatment should be used with **caution** in **elderly** women, especially those who are at risk of, or have pre-existing cognitive dysfunction. *[Strong recommendation level of evidence 2]*	☐
Assess anticholinergic burden and associated co-morbidities in patients being considered for anticholinergic therapy for overactive bladder syndrome. *[Weak recommendation]*	☐

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Offer **vaginal oestrogen therapy** to women with lower urinary tract symptoms and associated symptoms of genito-urinary syndrome of menopause. *[Weak recommendation level of evidence 1 a]*	☐
Offer **bladder wall injections** of onabotulinum toxin A (100 U) to patients with overactive bladder/urgency urinary incontinence refractory to conservative therapy (such as pelvic floor muscle training and/or drug treatment). *[Strong recommendation level of evidence 1 a]*	☐
Warn patients of the limited duration of response, risk of urinary tract infection and the possible prolonged need for clean intermittent self-catheterisation (ensure that they are willing and able to do so). *[Strong recommendation level of evidence 2]*	☐
Offer **sacral nerve stimulation** to patients who have overactive bladder/urgency urinary incontinence **refractory to anticholinergic therapy.** *[Strong recommendation, level of evidence: 1b]*	☐
Offer **augmentation cystoplasty** to patients with overactive bladder (OAB)/urgency urinary incontinence (UUI) who have **failed all other treatment options** and have been warned about the possible **small risk of malignancy.** *[Weak recommendation, level of evidence:3]*	☐
Inform patients undergoing augmentation cystoplasty of the high risk of having to perform **clean intermittent self-catheterisation** (ensure they are willing and able to do so) and that they need **life-long surveillance.** *[Strong recommendation, level of evidence: 3]*	☐
Do not offer detrusor myomectomy as a treatment for UUI. *[Weak recommendation]*	☐
Only offer **urinary diversion** to patients who have **failed less invasive therapies** for the treatment of OAB/UUI, who will accept a **stoma** and have been warned about the possible **small risk of malignancy.** *[Weak recommendation, level of evidence: 3]*	☐
Offer **early follow up** to women who have been commenced on **anticholinergic or beta-3 agonist therapy.** *[Strong recommendation]*	☐

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Offer **repeat injections of botulinum toxin,** as required, to women in whom it has been effective (refer to the manufacturer's guidance regarding the minimum timeframe for repeat injections). *[Strong recommendation]*	☐
Offer **life-long surveillance** to women who have a **sacral nerve stimulation** implant to monitor for lead displacement, malfunction and battery wear. *[Strong recommendation]*	☐
Offer **cystoscopic surveillance** to women with an **augmentation cystoplasty** due to the small risk of malignancy. *[Weak recommendation]*	☐
Stress Urinary Incontinence (SUI)	
Do not routinely carry out urodynamics when offering treatment for uncomplicated stress urinary incontinence (SUI). *[Strong recommendation, level of evidence: 1b]*	☐
Perform **pre-operative urodynamics** in cases of SUI with associated **storage symptoms**, cases in which the type of incontinence is unclear, cases where **voiding dysfunction** is suspected, cases with associated **pelvic organ prolapse** or those with a previous history of **SUI surgery.** *[Weak recommendation]*	☐
Perform urodynamics if the findings may change the choice of invasive treatment. *[Weak recommendation]*	☐
Do not use urethral pressure profilometry or leak point pressure to grade severity of incontinence as they are primarily tests of urethral function. *[Strong recommendation, level of evidence: 3]*	☐
Do not carry out imaging of the upper or lower urinary tract as part of the routine assessment of stress urinary incontinence. *[Strong recommendation, level of evidence: 2b]*	☐
Encourage **overweight and obese women** with lower urinary tract symptoms/stress urinary incontinence to **lose weight** and maintain weight loss. *[Strong recommendation, level of evidence: 1a ,1b]*	☐
Ensure that women with stress urinary incontinence (SUI) and/or their carers are informed regarding **available treatment options** before deciding on urinary containment alone. *[Strong recommendation]*	☐

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Offer **incontinence pads and/or containment devices** for management of SUI, either for temporary symptom control or where other treatments are not feasible. *[Strong recommendation, level of evidence: 1b]*	☐
Offer **supervised intensive pelvic floor muscle training (PFMT)**, lasting at least three months, as first-line therapy to all women with stress urinary incontinence (SUI) or mixed urinary incontinence (MUI) (including the elderly and pre- and post-natal). *[Strong recommendation, level of evidence: 1a]*	☐
Ensure that PFMT programmes are as **intensive** as possible. *[Strong recommendation, level of evidence: 1a]*	☐
Balance the efficacy and lack of adverse events from PFMT against the expected effect and complications from invasive surgery for SUI. *[Strong recommendation, level of evidence: 1b]*	☐
Do not offer electrical stimulation with surface electrodes (skin, vaginal, anal) alone for the treatment of SUI. *[Strong recommendation, level of evidence: 2a]*	☐
Offer **vaginal oestrogen therapy** to post-menopausal women with stress urinary incontinence (SUI) and symptoms of vulvo-vaginal atrophy. *[Strong recommendation, level of evidence: 1a]*	☐
In women taking **oral conjugated equine oestrogen** as hormone replacement therapy who develop or experience worsening SUI discuss alternative hormone replacement therapies. *[Strong recommendation, level of evidence: 1a]*	☐
Offer **duloxetine** (where licensed) to selected patients with SUI unresponsive to other conservative treatments and who want to avoid invasive treatment, counselling carefully about the risk of adverse events. *[Strong recommendation, level of evidence: 1a]*	☐
Duloxetine should be initiated and withdrawn using **dose titration** because of the high risk of adverse events. *[Strong recommendation, level of evidence: 1a]*	☐
Offer patients who have explored/failed conservative treatment options a choice of different surgical procedures, where appropriate, and discuss the advantages and disadvantages of each approach. *[Strong recommendation, level of evidence: 1a]*	☐

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Use **new devices** for treatment of SUI only as part of a structured research programme. Their outcomes must be **monitored** in a registry or as part of a well-regulated research trial. *[Strong recommendation, level of evidence: 1b]*	☐
Offer **urethral bulking agents** to women with SUI who request a low-risk procedure with the understanding that efficacy is lower than other surgical procedures, repeat injections are likely and long-term durability and safety are not established. *[Strong recommendation]*	☐
Do not offer autologous fat and hyaluronic acid as urethral bulking agents due to the higher risk of adverse events. *[Strong recommendation, level of evidence: 1b]*	☐
Offer a **mid-urethral sling (MUS)** to women seeking surgical treatment for stress urinary incontinence following a thorough discussion of the risks and benefits relative to other surgical modalities. *[Strong recommendation]*	☐
Inform women that long-term outcomes from MUS inserted by **retropubic route** are **superior** to those inserted via the transobturator route. *[Strong recommendation]*	☐
Inform women who are being offered a **single-incision sling** that long-term efficacy remains uncertain. *[Strong recommendation, level of evidence: 1a, 1b]*	☐
Inform women receiving **artificial urinary sphincter or adjustable compression device** (ACT©) that although cure is possible, even in expert centres there is a **high risk** of complications, mechanical failure or a need for explantation. *[Strong recommendation, level of evidence:3]*	☐
Management of **complicated SUI** should only be offered in centres with appropriate experience. *[Strong recommendation, level of evidence: 1a]*	☐
Base choice of surgery for recurrent SUI on careful evaluation, including individual patient factors and considering further investigations such as cystoscopy, multichannel urodynamics, as appropriate. *[Strong recommendation]*	☐

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Inform women with recurrent SUI that outcome of a surgical procedure, when used as a second-line treatment, is generally inferior to its use as a first-line treatment, both in terms of reduced efficacy and increased risk of complications. *[Weak recommendation]*	☐
Only offer adjustable mid-urethral sling as a primary surgical treatment for SUI as part of a structured research program. *[Strong recommendation, level of evidence: 3,4]*	☐
Consider secondary synthetic sling, bulking agents, colposuspension, autologous sling or artificial urinary sphincter (AUS) as options for women with complicated SUI. *[Weak recommendation]*	☐
Inform women receiving AUS or adjustable compression device (ACT©) that although cure is possible, even in expert centres, there is a **high risk of complications, mechanical failure or a need for explantation.** *[Strong recommendation, level of evidence:3]*	☐
Inform **obese women** about the increased risks associated with surgery, together with **lower probability of benefit.** [Strong recommendation, level of evidence:1,2b]	☐
Inform **older women** with SUI about **increased risks** associated with surgery, together with likelihood of lower probability of benefit. *[Weak recommendation, level of evidence:4]*	☐
Mixed Urinary Incontinence (MUI)	
Complete a **thorough history and examination** as part of assessment of mixed urinary incontinence (MUI). *[Strong recommendation, level of evidence:4]*	☐
Characterize MUI as either **stress-predominant or urgency-predominant** where possible. *[Strong recommendation]*	☐
Use **bladder diaries and urodynamics** as part of multi-modal assessment of patients with MUI to help inform the most appropriate management strategy. *[Strong recommendation, level of evidence: 3]*	☐
Treat the most bothersome symptom first. *[Weak recommendation]*	☐

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Offer **bladder training** as a first-line therapy to adults. *[Strong recommendation, level of evidence: 1b]*	☐
Offer supervised intensive **pelvic floor muscle training,** lasting at least **three months**, as a first-line therapy to all women with MUI (including elderly and postnatal women). *[Strong recommendation, level of evidence: 1a]*	☐
Offer **anticholinergic drugs or beta-3 agonists** to patients with **urgency-predominant** MUI. . *[Strong recommendation, level of evidence: 2]*	☐
Offer **duloxetine** (where licensed) to selected patients with **stress-predominant** MUI unresponsive to other conservative treatments and who want to avoid invasive treatment, **counselling** carefully about risk of adverse events. *[Weak recommendation, level of evidence:1b]*	☐
Treat the most bothersome symptom first in patients with mixed urinary incontinence (MUI). *[Strong recommendation]*	☐
Warn women that **surgery is less likely to be successful** than surgery for stress urinary incontinence alone. *[Strong recommendation, level of evidence: 3]*	☐
Inform women that **one single treatment may not cure** urinary incontinence; it may be necessary to treat other components of incontinence problem as well as the most bothersome symptom. *[Strong recommendation, level of evidence: 1b]*	☐
Underactive Bladder (UAB)	
Encourage **double voiding** in those women who are unable to completely empty their bladder. *[Weak recommendation]*	☐
Warn women who use **abdominal straining** to improve emptying about **pelvic organ prolapse** risk. *[Weak recommendation]*	☐
Use **clean intermittent self-catheterisation (CISC)** as a standard treatment in patients who are unable to empty their bladder. *[Strong recommendation, level of evidence: 3]*	☐
Thoroughly instruct patients in the technique and risks of CISC. *[Strong recommendation, level of evidence: 1b]*	☐

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Offer indwelling **transurethral catheterisation and suprapubic cystostomy** only when **other modalities** for urinary drainage **have failed** or are unsuitable. *[Weak recommendation]*	☐
Do not routinely recommend parasympathomimetics in the treatment of women with UAB. *[Strong recommendation, level of evidence: 1b]* **Offer alpha-blockers** before more invasive techniques. *[Weak recommendation, level of evidence: 2b]*	☐
Offer **onabotulinumtoxinA** external sphincter injections before more invasive techniques as long as the patient is informed that the evidence to support this treatment is of low quality. *[Weak recommendation, level of evidence: 3]*	☐
Offer **sacral nerve stimulation** to women with UAB refractory to conservative measures. *[Strong recommendation, level of evidence: 1b]*	☐
Do not routinely offer detrusor myoplasty as a treatment for detrusor underactivity. *[Weak recommendation, level of evidence: 3]*	☐
Bladder Outlet Obstruction (BOO)	
Use **standardised classification** of bladder outlet obstruction in women (anatomical or functional) and research populations should be fully characterized using such classification. *[Strong recommendation]*	☐
Take a full clinical **history** and perform a thorough clinical **examination** in women with suspected BOO. *[Strong recommendation, level of evidence: 3]*	☐
Do not rely on measurements from urine flow studies alone to diagnose female BOO. *[Strong recommendation, level of evidence: 3]*	☐
Perform **cystourethroscopy** in women with suspected anatomical BOO. *[Strong recommendation]*	☐
Perform **urodynamic evaluation** in women with suspected BOO. *[Strong recommendation, level of evidence: 3]*	☐
Caution women about **risk for recurrent SUI** and the need for a repeat/concurrent anti-UI surgery after sling revision. *[Strong recommendation, level of evidence: 3]*	☐

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Offer **pelvic floor muscle training (PFMT)** aimed at pelvic floor muscle relaxation to women with functional bladder outlet obstruction (BOO). *[Strong recommendation, level of evidence: 3]*	☐
Offer use of a **vaginal pessary** to women with **grade 3 to 4 cystocoeles** and BOO who are not eligible/inclined towards other treatment options. *[Weak recommendation, level of evidence: 3]*	☐
Offer **urinary containment devices** to women with BOO to address **urinary leakage** as a result of BOO, but not as a treatment to correct the condition. *[Weak recommendation, level of evidence: 3]*	☐
Offer **clean intermittent self-catheterisation** to women with urethral strictures or post-urinary incontinence surgery for BOO. *[Weak recommendation, level of evidence: 1b.3]*	☐
Do not offer an intraurethral device to women with BOO. *[Strong recommendation, level of evidence: 3]*	☐
Offer **uroselective alpha-blockers,** as an off-label option, to women with functional bladder outlet obstruction (BOO) following discussion of the potential benefits and adverse events. *[Weak recommendation, level of evidence: 1a]*	☐
Offer **oral baclofen** to women with BOO particularly those with increased electromyography activity and a sustained detrusor contraction during voiding. *[Weak recommendation, level of evidence: 1b]*	☐
Only offer **sildenafil** to women with BOO as part of a **well-regulated** clinical trial. *[Strong recommendation, level of evidence: 1b]*	☐
Do not offer thyrotropin-releasing hormone to women with BOO. *[Strong recommendation, level of evidence: 1b]*	☐
Offer **intrasphincteric injection of botulinum toxin** to women with functional bladder outlet obstruction (BOO). *[Weak recommendation, level of evidence: 1b]*	☐
Offer **sacral nerve stimulation** to women with functional BOO. *[Weak recommendation, level of evidence: 3]*	☐

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Advice women with voiding symptoms associated with pelvic organ prolapse (POP) that symptoms may improve after POP surgery. *[Weak recommendation, level of evidence: 3]*	☐
Offer **urethral dilatation** to women with **urethral stenosis** causing BOO but advise on the likely need for repeated intervention. *[Weak recommendation, level of evidence: 1b,3]*	☐
Offer **internal urethrotomy** with post-operative urethral self-dilatation to women with BOO due to urethral stricture disease but advise on its limited long-term improvement and the risk of **post-operative urinary incontinence (UI).** *[Weak recommendation, level of evidence: 3]*	☐
Do not offer urethral dilatation or urethrotomy as a treatment for BOO to women who have **previously undergone mid-urethral synthetic tape** insertion due to the theoretical risk of causing urethral mesh extrusion. *[Weak recommendation]*	☐
Inform women of limited long-term improvement (only in terms of post-void residual and quality of life) after internal urethrotomy. *[Weak recommendation, level of evidence: 3]*	☐
Nocturia	
Take a complete medical history from women with nocturia. *[Strong recommendation, level of evidence: 4]*	☐
Use a **validated questionnaire** during the assessment of women with nocturia and for re-evaluation during and/or after treatment. *[Weak recommendation, level of evidence: 3]*	☐
Use a **three-day bladder diary** to assess nocturia in women. *[Strong recommendation, level of evidence: 3]*	☐
Do not use nocturnal-only bladder diaries to evaluate nocturia in women. *[Weak recommendation, level of evidence: 4]*	☐
Offer women with lower urinary tract symptoms (LUTS) **lifestyle advice** prior to, or concurrent with, treatment. *[Strong recommendation, level of evidence: 1 b]*	☐

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Offer **pelvic floor muscle training for nocturia** (either individually or in the group setting) to women with urinary incontinence or other storage LUTS. *[Strong recommendation, level of evidence: 1 b]*	☐
Offer women with nocturia and a history suggestive of **obstructive sleep apnoea** a referral to a **sleep clinic** for an assessment of suitability for continuous positive airway pressure treatment. *[Strong recommendation, level of evidence: 1 a]*	☐
Offer **desmopressin treatment** for nocturia secondary to nocturnal polyuria to women following appropriate counselling regarding potential benefits and associated risks (including hyponatremia). *[Strong recommendation, level of evidence: 1 b]*	☐
Carefully monitor **serum sodium concentration** in elderly patients treated with desmopressin. Avoid prescribing desmopressin to patients with a baseline serum sodium concentration below normal range. *[Strong recommendation, level of evidence: 1 a]*	☐
Offer **anticholinergic treatmen**t for nocturia to women with urgency incontinence or other storage lower urinary tract symptoms following appropriate counselling regarding potential benefits and associated risks. *[Strong recommendation, level of evidence: 1 b]*	☐
Inform women with nocturia that the combination treatment with **behavioral therapy** and anticholinergic drugs is unlikely to provide increased efficacy compared with either modality alone. *[Weak recommendation, level of evidence: 1 b]*	☐
Offer **combination treatment** with anticholinergics and desmopressin to women with OAB and nocturia secondary to nocturnal polyuria following appropriate counselling regarding potential benefits and associated risks. *[Weak recommendation, level of evidence: 1 b]*	☐
Offer **vaginal oestrogen treatment** to women with nocturia following appropriate counselling regarding potential benefits and associated risks. *[Weak recommendation, level of evidence: 1 b]*	☐
Offer **timed diuretic treatment** to women with nocturia secondary to polyuria following appropriate counselling regarding the potential benefits and associated risks. *[Weak recommendation, level of evidence: 1 b]*	☐

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Pelvic organ prolapse	
Perform a **pelvic organ prolapse (POP) reduction test** in continent women to identify those with occult stress urinary incontinence and counsel them about the pros and cons of additional anti-incontinence surgery at the time of POP surgery. *[Strong recommendation, level of evidence: 2 a]*	☐
Inform women, who do not need a vaginal pessary or surgical intervention, about the potential relief from lower urinary tract symptoms (LUTS) from **pelvic floor muscle therapy** (PFMT). *[Strong recommendation, level of evidence: 2 a]*	☐
Do not offer pre-operative PFMT in order to improve outcome of LUTS **if pessary therapy or surgical intervention is indicated** for POP. *[Strong recommendation, level of evidence:2 a]*	☐
Offer simultaneous surgery for POP and SUI only after a **full discussion** of the potential risks and benefits of **combined surgery vs. POP surgery** alone. *[Strong recommendation, level of evidence: 1 a]*	☐
Inform women of **increased risk of adverse events** with **combined prolapse and anti-urinary incontinence surgery compared** to prolapse surgery alone. *[Strong recommendation, level of evidence: 1 a]*	☐
Inform women that there is a **risk of developing de novo SUI** after prolapse surgery. *[Strong recommendation, level of evidence: 1 a]*	☐
Warn women that the benefit of combined surgery for POP and SUI may be outweighed by the increased risk of adverse events compared to prolapse surgery alone. *[Strong recommendation, level of evidence: 1 a]*	☐
Urinary fistula	
Use a **classification system** for urinary tract fistulae to try to standardize terminology in this subject area. *[Strong recommendation]*	☐
Do not routinely use ureteric stents as prophylaxis against injury during routine gynecological surgery. *[Strong recommendation, level of evidence: 2]*	☐

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Suspect ureteric injury or fistula in patients **following pelvic surgery** if a fluid leak or pelvicalyceal dilatation occurs post-operatively, or if drainage fluid contains high levels of creatinine. *[Strong recommendation, level of evidence: 3]*	☐
Manage **upper urinary tract fistulae** initially by **conservative or endoluminal techniques** where such expertise and facilities exist. *[Weak recommendation, level of evidence: 4]*	☐
Tailor the **timing of fistula repair** to individual patient and surgeon requirements once any edema, inflammation, tissue necrosis, or infection, are resolved. *[Weak recommendation, level of evidence: 3]*	☐
Ensure that **bladder is continuously drained** following fistula repair until healing is confirmed (expert opinion suggests: 10–14 days for simple and/or postsurgical fistulae; 14–21 days for complex and/or post-radiation fistulae). *[Weak recommendation, level of evidence: 3]*	☐
Where urinary and/or faecal diversions are required, **avoid using irradiated tissue** for repair. *[Weak recommendation, level of evidence: 3]*	☐
Use **interposition graft** when repair of radiation-associated fistulae is undertaken. *[Weak recommendation, level of evidence: 3]*	☐
Urethral diverticulum	
Offer **surgical removal** of symptomatic urethral diverticula. *[Weak recommendation, level of evidence: 3]*	☐
If **conservative treatment** is adopted, warn patients of the small **(1–6%)** risk of **cancer** developing within the **diverticulum.** *[Weak recommendation, level of evidence: 3]*	☐
Carefully question and **investigate** patients for **co-existing voiding dysfunction** and urinary **incontinence.** *[Strong recommendation, level of evidence: 1 b]*	☐
Following appropriate counselling, **address** bothersome **stress urinary incontinence** at the time of **urethral diverticulectomy** with concomitant non-synthetic sling. *[Weak recommendation, level of evidence: 3]*	☐

Adoloped from: Management of Non-neurogenic female Lower Urinary Tract Symptoms
EAU Guidelines. Edn. Presented at the EAU Annual Congress Milan 2021. ISBN 978-94-92671-13-4

IMPLEMENTATION REMARKS

- Review type and amount of fluid intake in patients with OAB.

- Provide smoking cessation strategies.

- Surgeons involved in fistula surgery should have appropriate training, skills, and experience to select an appropriate procedure for each patient.

- Attention should be given as appropriate to skin care, nutrition, rehabilitation, counselling and support prior to, and following, fistula repair.

ACRONYMS AND ABBREVIATIONS

LUTS	lower urinary tract symptoms
PSA	prostate-specific antigen
PFS	pressure flow study

ACKNOWLEDGEMENTS

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