

Position Paper

Management of Overactive Bladder in Women: Evidence-Based Recommendations from the OAB-Women Study Group, Society of Obstetricians and Gynecologists Pakistan (SOGP)

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Abstract

This position paper presents evidence-based guidelines for the management of Overactive Bladder (OAB) in women, developed by the OAB-Women Study Group of the Society of Obstetricians and Gynecologists Pakistan (SOGP). The guidelines include a standard definition of OAB based on ICS/IUGA joint terminology and cover various aspects of etiology, pathophysiology, assessment, and treatment of OAB. The management flowchart outlines the patient journey from a general practitioner to a urogynecologist. OAB is a diagnosis of exclusion, and behavioral interventions are recommended as the first-line treatment. General gynecologists and urologists can provide pharmacotherapy as the second-line treatment and should know when to refer the patient for third-line treatment.

The OAB-Women Study Group was formed by SOGP to develop evidence-based recommendations for OAB management. A comprehensive literature search was conducted, and a meeting was held to draft the document, which was critically reviewed by all authors.

OAB is a complex condition that requires a multidisciplinary approach. General practitioners can manage initial treatment, with timely referral when needed. Understanding the pathogenesis of OAB can help improve management strategies and patient outcomes.

Keywords: Female; Management; Overactive Bladder (OAB)

The full guideline and executive summary are freely available on the SOGP website <https://www.sogp.org.pk>

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Introduction

Overactive Bladder (OAB) is defined as "urinary urgency, usually accompanied by frequency and nocturia, with or without urinary incontinence, in the absence of pathologic or metabolic conditions that might explain these symptoms"¹ OAB affects over 45% of women aged 65 and older.² Urinary urgency with or without urinary incontinence (UI) is the hallmark of OAB. OAB can be categorized into two types: dry-OAB (urgency, frequency without urge incontinence), which affects nearly 66% of OAB patients, and wet-OAB (urgency and frequency with urge incontinence), which affects around 33% of patients.³

While treatment guidelines that clearly outline appropriate first-, second-, and third-line treatment strategies for OAB exist,^{4, 5} it is believed that these guidelines primarily target patients in developed countries. Pakistan, being a developing country, lacks resources for even initial evaluations, such as urine culture, due to limited health budgets. Moreover, the local prevalence data varies due to a relatively low average age. A study conducted in rural Pakistan reported an overall prevalence of any UI to be 11.5%.

Among the women with UI, 41% had stress urinary incontinence (SUI), 27.7% had urge urinary incontinence (UUI), and 24.1% had mixed urinary incontinence

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(MUI).⁶ Although no local study on OAB prevalence exists, data from rural Pakistan indicates that the burden of UI is similar to that observed in developed countries.

Given the complexity of OAB management and the differing guidelines according to gender and age groups, standardized treatment algorithms may not be directly applicable to our population. Therefore, we have formulated this group to develop our own guidelines (Figure 1). This position paper aims to summarize our current understanding of the etiology, pathophysiology, assessment, and treatment of OAB based on evidence-based literature search.

Methodology

A meeting was organized by SOGP, attended by all contributors, and encompassed the conception of all principal content. The text was drafted and underwent critical review by all authors. Subsequently, the manuscript was meticulously edited and finally endorsed by SOGP.

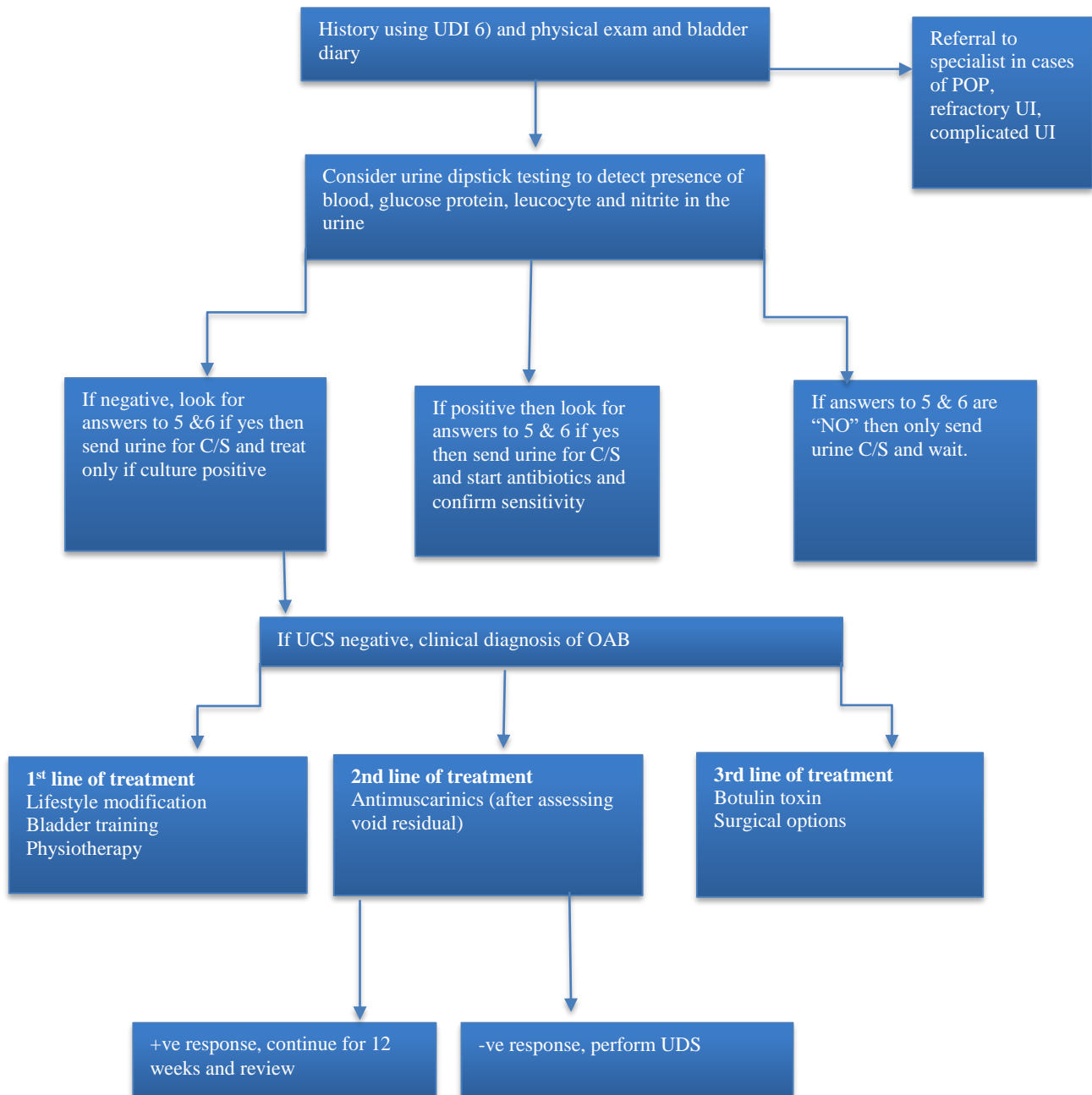


Figure 1: Flowchart for Diagnosis and Management of OAB in females.

Members of the group diligently contributed to this document without receiving any honorarium or other benefits for their work.

The group strongly advocated for a comprehensive review of international guidelines and conducted a thorough literature search to formulate our recommendations for the management of OAB at both primary and secondary care levels. The primary goal was to develop updated evidence-based recommendations for the management of OAB in women. The group comprised specialists in Urogynecology, along with general gynecologists with a keen interest in Urogynecology.

Discussion

The OAB-Women Study Group conducted a comprehensive review and documentation of evidence in the following areas:

Etiology/Pathophysiology of Overactive Bladder (OAB): Currently, the origin of OAB is considered idiopathic, but it is also observed in conjunction with neurological diseases, involving both detrusor overactivity (DO) and detrusor underactivity (DU). The pathophysiology of OAB is an ongoing subject of research, and three theories have been proposed:

1. **Urothelium-based hypothesis:** This theory suggests that increased afferent activity is linked to abnormalities in urothelium receptor function or neurotransmitter release.
2. **Myogenic hypothesis:** This hypothesis associates OAB with abnormalities in myocyte excitability.
3. **Neurogenic hypothesis:** According to this theory, there is a defect in the central inhibitory pathways, leading to abnormal activation of voiding reflexes. OAB symptoms are also observed in patients with neurological disease, as evidenced by DO on urodynamics, which may result in abnormalities of sensory and motor pathways.^{7, 8}

Based on these underlying mechanisms or pathophysiology, multiple phenotypes have been proposed⁹, and several potential OAB subtypes have been identified, as summarized in Table I.

Diagnosis and evaluation of OAB

The OAB diagnosis is based mainly on lower urinary tract symptoms (LUTS) i.e. frequency, urgency and urgency incontinence. However, these symptoms are subjective and patients presenting with these symptoms

may have a wide differential diagnosis including storage problems, voiding difficulties, outlet obstruction, fluid balance issues, urethral sphincter weakness or functional incontinence of the elderly.

Table I: Phenotypes of OAB.

| | |
|---|--|
| Phenotypes according to pathophysiology | Phenotypes according to urodynamic studies |
| Affective disorders | Urothrogenic |
| Metabolic syndromes | Myogenic |
| Urinary microbiota | Supraspinal |
| Functional Gastrointestinal disorders | Urotheliogenic |
| Sex hormone deficiency | Detrusor underactivity |
| Autonomic nervous system dysfunction | Urotheliomyogenic |

A detailed history, clinical examination, and few basic investigations along with using psychometrically validated questionnaires to assess the symptom severity and their effect on health-related quality of life (HRQL) should help to confirm the diagnosis of OAB.¹⁰

A midstream urine specimen should be sent for urinalysis and urine culture in all cases to rule out urinary tract infection and microscopic hematuria. Cystoscopy and upper tract imaging is indicated with presence of hematuria on urinalysis with microscopy when no underlying etiology can be found.¹¹ A post-void residual (PVR) should be checked in patients with obstructive symptoms (intermittent stream and hesitancy).

Using self-reported OAB questionnaires can be a useful way to allow patients to quantify the impact of their urinary symptoms on their health-related quality of life (HRQL) and also to check their satisfaction with treatment. The advantages of using valid and reliable questionnaires include their speed and ease of administration, measurability, low cost, reproducibility, and their non-invasive nature. However, since the reporting is subjective, they have the disadvantage of being open to bias and therefore cannot be totally relied upon to make a definite diagnosis.¹²

Among the general questionnaires, short versions of Urogenital Distress Inventory (UDI-6), has been tested and validated in different languages including Urdu for assessment of severity of urinary symptoms for its use nationwide.¹³

The diagnosis of OAB is primarily based on lower urinary tract symptoms (LUTS), which include frequency, urgency, and urgency incontinence. However, these symptoms are subjective, and patients presenting with such symptoms may have a broad range of differential diagnoses, including storage problems, voiding

difficulties, outlet obstruction, fluid balance issues, urethral sphincter weakness, or functional incontinence in the elderly.

warranted.¹¹ Additionally, in patients experiencing obstructive symptoms like intermittent stream and hesitancy, measuring the post-void residual (PVR) is crucial.

Self-reported OAB questionnaires can serve as a valuable tool for patients to quantify the impact of their urinary symptoms on HRQL and evaluate their satisfaction with treatment. Valid and reliable questionnaires offer advantages such as speed and ease of administration, measurability, low cost, reproducibility, and non-invasiveness. However, since the reporting is subjective, these questionnaires have the limitation of potential bias and cannot be solely relied upon to make a definitive diagnosis.¹²

Among the various questionnaires, short versions of the Urogenital Distress Inventory (UDI-6) have been tested and validated in different languages, including Urdu, making it suitable for nationwide assessment of the severity of urinary symptoms.¹³

Bladder diaries are recommended to objectively assess patient symptoms and evaluate treatment response by recording the volume and timing of fluid intake, voids (including incontinence episodes), and incontinence pad usage. The fourth International Consultation on Incontinence (ICI)¹⁴ emphasizes the high importance of using bladder diaries to document the frequency of micturition, voided volumes, incontinence episodes, and pad usage as part of patient-reported outcomes (PRO). These diaries provide valuable information on symptom improvement, its impact on quality of life (QoL), and treatment efficacy from the patient's perspective.¹⁵

The recommended length of bladder diaries to obtain reliable estimates of urinary incontinence (UI) frequency depends on the frequency and variability of an individual's symptoms. Shorter diaries are associated with better compliance¹⁶, and research has shown that reliability increases with monitoring durations of 5-7 days, while longer diaries of more than one week tend to decrease reliability.

Regarding urodynamics, they are not typically used as a first-line investigation for uncomplicated OAB cases. However, urodynamics may be considered in complicated cases, such as UI coexisting with pelvic organ prolapse (POP) or a history of prior anti-incontinence surgery. Urodynamics may also be performed when there are refractory OAB symptoms despite treatment, or in preparation for more advanced OAB treatment options.¹⁷

1. Do you usually experience frequent urination? If yes, how much does this bother you?

Not at all
 Slightly
 Moderately
 Severely

2. Do you wake up at night to pass urine if yes then how frequent and does this bother you?

Not at all
 Slightly
 Moderately
 Severely

3. Do you usually feel urgency to pass urine which is difficult to defer If yes, how much does this bother you?

Not at all
 Slightly
 Moderately
 Severely

4. Do you leak on the way to toilet, if yes then how much does this bother you?

Not at all
 Slightly
 Moderately
 Severely

5. Do you experience difficulty emptying your bladder?

Yes
 No

6. Do you usually experience burning, pain or discomfort during, before or after voiding

Yes
 No

اردو ترجمہ UDI-6

نام: _____ عمر: _____ MR Number: _____

| شمارہ | سوال | جواب |
|-------|--|------|
| 1 | آپ کو عموماً کتنی بار باریک باریک پھینکنا پڑتا ہے؟ (جسے تیز باریک باریک پھینکنا کہا جاتا ہے) | |
| 2 | شیر عادت کے وقت چھینکنا یا باریک باریک پھینکنا پڑتا ہے؟ | |
| 3 | جسٹانے والے وقت یا کام کے دوران باریک باریک پھینکنا پڑتا ہے؟ | |
| 4 | چھینکنا یا باریک باریک پھینکنا پڑتا ہے؟ | |
| 5 | پھینکنا یا باریک باریک پھینکنا کرنے میں دشواری محسوس ہوتی ہے؟ | |
| 6 | پھینکنا یا باریک باریک پھینکنا کرنے کے دوران جھنجھکی یا جلنے (بڑبڑ) اور چھینکنا یا باریک باریک پھینکنا کرنے کی جگہ (مشرم) میں درد ہوتا ہے؟ | |

Figure 2 shows English and Urdu versions of UDI – SF 6.

To establish a diagnosis of Overactive Bladder (OAB), a thorough medical history, comprehensive clinical examination, and a set of basic investigations are essential. In order to assess the severity of symptoms and their impact on the patient's health-related quality of life (HRQL), psychometrically validated questionnaires can be utilized.¹⁰

For all cases, it is imperative to obtain a midstream urine specimen for urinalysis and urine culture to exclude the presence of urinary tract infection and microscopic hematuria. If hematuria is detected on urinalysis with microscopy and no apparent underlying cause is identified, cystoscopy and upper tract imaging are

Treatment of OAB

After a comprehensive evaluation, behavioral intervention is typically considered as the first-line treatment for Overactive Bladder (OAB). This intervention encompasses self-monitoring through voiding diaries, lifestyle modifications (e.g., reducing caffeine intake, avoiding bladder irritants, managing fluid intake, weight control, addressing constipation, smoking cessation), urge suppression techniques (e.g., flick technique), and timed voiding.

In developed countries, patients are often instructed to perform pelvic floor muscle exercises or physiotherapy as part of the first-line treatment. However, in Pakistan, due to a lack of expertise and a low literacy rate, teaching patients these techniques can be challenging. As a result, medical therapy often becomes the preferred choice for treatment.

Prior to initiating pharmacotherapy, patients should be carefully selected and counseled. Anticholinergic drugs are the mainstay of pharmacotherapy for OAB. These drugs are available in immediate and extended-release oral preparations, with the former being more cost-effective than the latter (I-A). Additionally, transdermal and vaginal preparations are also available. Subjective clinical improvement is typically observed around 3 months after initiating pharmacotherapy (I-A). Transdermal preparations are associated with a lower side effect profile (I-A).¹⁸

Tolterodine is an antimuscarinic drug which leads to a significant clinical improvement in around 12 weeks (I-A).¹⁹ Recent studies have shown that the likelihood of dementia and Alzheimer's disease is increased by the cumulative effects of these drugs over a long period. Solifenacin and Trospium are superior anticholinergic drugs in patients with OAB who have cognitive impairment (I-B & II-B respectively)²⁰. Darifenacin can be considered in patients with preexisting cardiac and cognitive problems (I-B).

The other group of drugs include β -3 Adrenergic receptor agonists. They have a lower risk of side effects as compared to antimuscarinics drugs. Mirabegron is the first licensed β 3-AR agonist for the treatment of OAB. It is a safe and efficacious choice for patients intolerant to antimuscarinics.²¹ Side effects of β 3 include hypertension, urinary tract infections, and urinary retention. Systematic reviews have reported comparable efficacy of both the groups of medication. B-adrenergic

agonists are contraindicated in patients with severe uncontrolled hypertension. A combination therapy of an anticholinergic drug with a β 3 agonist may be useful for patients not responding to monotherapy.

The salient features of treatment plan for OAB are shown in table II.

Table II: Salient features of treatment plan for OAB.

| |
|--|
| Bladder training |
| <ul style="list-style-type: none"> ✓ Offer bladder training lasting for a minimum of 6 weeks as first-line treatment to women with urgency or mixed UI. ✓ If women do not achieve satisfactory benefit from bladder training programs, the combination of an OAB drug with bladder training should be considered if frequency is a troublesome symptom. |
| Women with mixed UI symptoms offer: |
| <ul style="list-style-type: none"> ✓ Lifestyle advice, Bladder training and Pelvic floor muscle training |
| Pelvic floor muscle training |
| <ul style="list-style-type: none"> ✓ Undertake routine digital assessment to confirm pelvic floor muscle contraction before the use of supervised pelvic floor muscle training for the treatment of UI. ✓ Refer supervised pelvic floor muscle training of at least 3 months' duration as first-line treatment to women with stress or mixed UI. ✓ Pelvic floor muscle training programs should comprise at least 8 contractions performed 3 times per day. ✓ Continue an exercise program if pelvic floor muscle training is beneficial. ✓ Electrical stimulation and/or biofeedback referral should be considered in women who cannot actively contract pelvic floor muscles in order to aid motivation and adherence to therapy. ✓ Offer pelvic floor muscle training to women in their first pregnancy as a preventive strategy for UI. |
| Considerations before further treatment |
| <ul style="list-style-type: none"> ✓ Uro-flowmetry and post void residual urine measurement before starting medical treatment in women >50 years old /OR and for any voiding dysfunction ✓ When offering Antimuscarinics drugs to treat OAB always take account of: The woman's coexisting conditions (for example, poor bladder emptying) - use of other existing medication affecting the total anticholinergic load- risk of adverse effects. ✓ Before OAB drug treatment starts, discuss with women: The likelihood of success and associated common adverse effects like dryness of mouth and constipation should be discussed. ✓ Patient should be informed about the frequency and route of administration and effects of treatment should be considered after 4 weeks of therapy. ✓ IF symptoms improve the medicines should be continued for maximum 3 months and further use of Antimuscarinics should be advised by secondary care personnel. ✓ If a woman's OAB drug treatment is effective and well-tolerated, do not change the dose or drug. |
| Offering OAB drugs |
| <ul style="list-style-type: none"> ✓ Offer one of the following choices first to women |

with OAB or mixed UI: - Oxybutynin (immediate release), or - Tolterodine (immediate release), or Solifenacin (once daily preparation).

Referral for further treatment

- ✓ Offer referral to secondary care if OAB drug treatment is not successful.
- ✓ If the woman is not responding to first line of medical treatment then refer her for urodynamic investigation to determine whether detrusor over activity is present and responsible for her OAB symptoms.

Refractory overactive bladder

The AUA/SUFU guidelines define refractory bladder as the failure to respond to 8 to 12 weeks of behavioral therapy or 4-8 weeks of at least one antimuscarinic drug.²² After the combination of anticholinergics with $\beta 3$ agonists proves ineffective, several options can be considered:

Intravesical BoNT-A injection

Onabotulinum toxin type A (BoNT-A) is now an approved treatment method for OAB. BTX A is injected after counseling the patient for possibility of CISC (clean intermittent self-catheterization) and risks of UTI. Initial dose is 100 units which is administered via rigid/ flexible cystoscopy using either a flexible or rigid cystoscope. If there is good symptomatic relief, the woman should be taught to seek specialist review if symptoms recur, and repeat injections should be offered if necessary, increasing doses of botulinum toxin A to 200 units is advised.⁴ The commonest side effects include recurrent Urinary tract infections (UTI) and the need for clean intermittent self-catheterization (CISC).²³ UTI can be treated with appropriate antibiotics.

PTNS: Posterior tibial nerve stimulation has been found to be an attractive option in patients with refractory overactive bladder with about 60% patients showing a subjective improvement. It is not very costly and is minimally invasive. However weekly sessions for 8 to 12 weeks are time consuming. Transcutaneous tibial nerve stimulation (TTNS) is noninvasive and can be practiced at home making it more user friendly. TTNS has been found to be effective as a maintenance therapy after PTNS.²⁴

Sacral neuromodulation

SNM should be offered to women if the overactive bladder fails to respond to botulinum toxin type A or they are not willing to prepared to risk CISC associated with botulinum toxin type A. Sacral neuromodulation electrically stimulates sacral nerves carrying signals

from pelvic floor and helps improve the symptoms of overactive bladder by direct neuromodulation of the nerve. It is especially helpful in patients unwilling for clean intermittent self-catheterization (CISC).

Augmentation enterocystoplasty (AEC)

AEC is a standard surgical procedure recommended for patients with refractory or severe bladder inflammatory diseases. It offers a long-term solution for a well-selected group of patients. However, AEC comes with certain limitations, such as its cost, invasive nature, need for prolonged hospitalization, and potential complications, including the requirement for CISC, altered bowel habits, and effects on renal function.²⁵

Detrusor myomectomy (DM)

DM, also known as Auto-augmentation, is considered a safer and relatively less invasive surgical option compared to AEC. It avoids the need for bowel handling and related complications.²⁶

Conclusion

OAB is a chronic medical condition which can affect the HRQoL considerably and management of patient expectations is essential. Currently, the pathogenesis of OAB remains unclear and the etiology is multifactorial. We conclude that initial management for at least 4 weeks can be done by a general /family physician. They should know red flag symptoms for timely referral (table III).

Table III: Indications for specialist referral in cases of OAB.

- ✓ Refer women with UI who have symptomatic prolapse that is visible at or below the vaginal introitus to a specialist.
- ✓ Urgently refer women with UI who have any of the following: microscopic haematuria in women aged 50 years and older
- ✓ Visible haematuria
- ✓ Recurrent or persisting UTI associated with haematuria in women aged 40 years and older
- ✓ Suspected malignant mass arising from the urinary tract
- ✓ persisting bladder or urethral pain
- ✓ clinically benign pelvic masses
- ✓ associated fecal incontinence
- ✓ suspected neurological disease
- ✓ symptoms of voiding difficulty
- ✓ suspected urogenital fistulae
- ✓ previous continence surgery
- ✓ previous pelvic cancer surgery
- ✓ previous pelvic radiation therapy

There is a dire need to educate physicians about first line management including training for pelvic physiotherapy. The use of anticholinergics should be limited to 4 weeks

for good outcome and an appropriate Urogynecologist referral should be considered.

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