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Complex Relationship Between OAB and BPH

Overactive bladder (OAB) is a subset of storage-related symptoms that can occur with lower urinary tract symptoms (LUTS). Discerning the underlying cause of LUTS in men can be challenging due to the frequent coexistence of storage-related and voiding-related symptoms.[1] While benign prostatic hyperplasia (BPH) is traditionally associated with voiding symptoms such as weak stream or hesitancy, many men also report storage symptoms—including urgency, frequency, and nocturia—as well as the sensation of incomplete bladder-emptying. This overlap of voiding and storage symptoms increases the likelihood of misattributing overactive bladder (OAB)-related LUTS to BPH, and vice versa.[1]

Despite the clinical complexity of OAB in men with BPH, research in this area remains extremely limited. Focused studies are urgently needed to characterize the interplay of pathophysiology, symptom burden, and treatment outcomes—particularly in patients with additional comorbidities.

Historically, LUTS in men were largely attributed to bladder outlet obstruction (BOO) resulting from BPH, particularly as the prevalence of both LUTS and BPH increases with age.[1,2] However, while BPH remains a common cause of LUTS, it is now well recognized that OAB contributes significantly to storage-related symptoms in men.[1,2] The clinical presentations of OAB, BPH, and LUTS often overlap, making diagnosis more complex.[3,4] The relationship between OAB, BPH, LUTS, benign prostatic enlargement (BPE), and BOO, requires careful evaluation to avoid misdiagnosis.[1,5] (Figure 1)

Notably, one study showed over 40% of men with LUTS had OAB symptoms with no evidence of BOO, further highlighting the complexity of these conditions.[3,6]

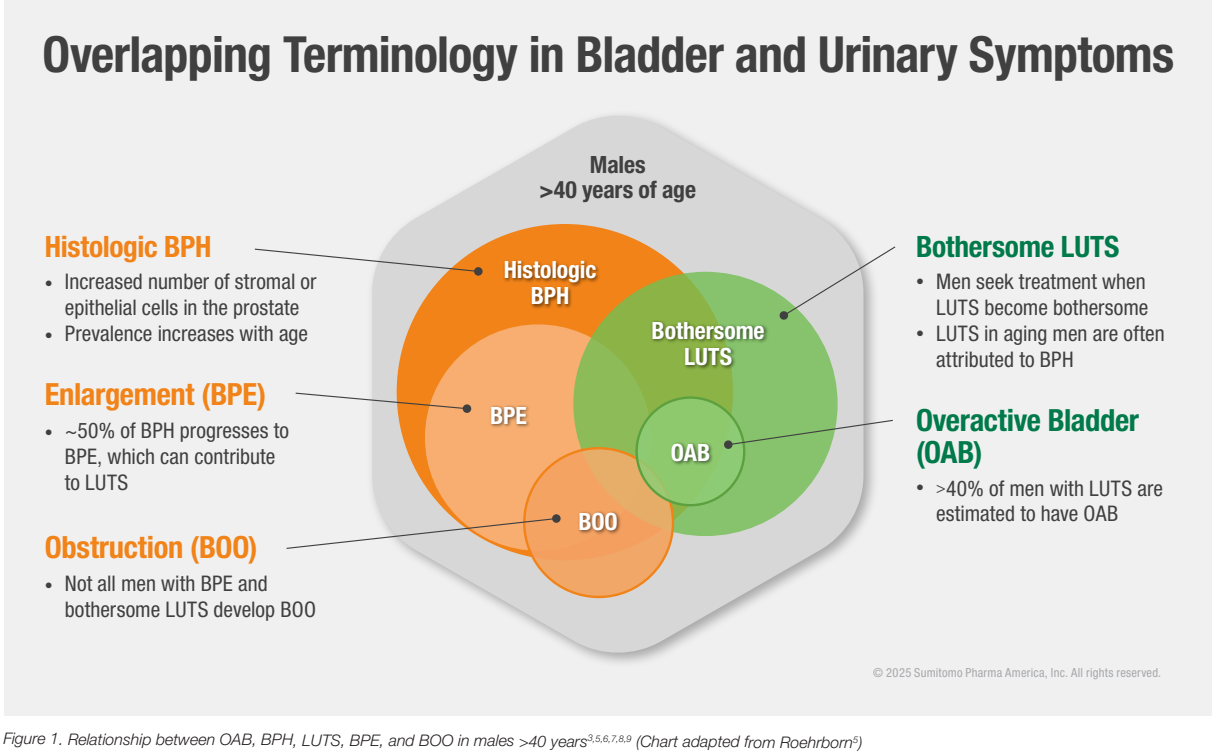

Figure 1. Relationship between OAB, BPH, LUTS, BPE, and BOO in males >40 years[3,5,6,7,8,9] (Chart adapted from Roehrborn[5])

Prevalence and Diagnostic Trends in OAB and BPH

A growing body of evidence suggests that BPH is diagnosed and treated more frequently than OAB in men with LUTS, highlighting the potential undertreatment of storage-related symptoms.[1]

To investigate the prevalence of LUTS secondary to OAB and/or BPH, a US retrospective observational study analyzed claims data (2012–2017) from the IBM MarketScan Commercial Claims and Encounters and the Medicare Supplemental Coordination of Benefits databases. The study included 462,400 men, and the age-standardized prevalence of LUTS—defined as a diagnosis or treatment for OAB and/or BPH—was estimated at 12.2%.[1]

These findings underscore the diagnostic complexity of LUTS in men and the risk of overemphasizing voiding symptoms (commonly associated with BPH) while overlooking storage symptoms that may indicate OAB. This imbalance points to a broader need for comprehensive evaluation strategies to ensure that both conditions are accurately identified and appropriately managed.

Clinical Perspective: Addressing the Underdiagnosis of OAB in Men with BPH

The American Urological Association/Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction (AUA/SUFU) Diagnosis and Treatment of Idiopathic OAB Guideline emphasizes the importance of comprehensive symptom assessment in men with LUTS, highlighting that OAB is often underdiagnosed and undertreated compared to BPH.[10] Clinicians are encouraged to differentiate between storage and voiding symptoms to avoid misdiagnosis[1] and ensure that OAB patients are appropriately managed through a shared decision-making process to maximize symptom control and quality of life (QoL), while minimizing adverse events and burden of disease.[10]

Diagnosis of Urinary Symptoms in Men with BPH

According to the AUA Guideline on Management of LUTS Attributed to BPH (LUTS/BPH), men presenting with bothersome LUTS possibly related to BPH should undergo an initial evaluation. This includes a detailed medical history, physical examination, urinalysis, and completion of the International Prostate Symptom Score (IPSS) questionnaire.[2]

A complete medical history should be taken to assess patient symptoms, prior procedures that could explain presence of symptoms, sexual history, use of medications, and overall fitness and health. While a urinalysis cannot diagnose BPH, it is a critical tool to rule out other causes of LUTS not associated with BPH through the detection of bacteria, blood, white cells, glucose, or protein in the urine. When interpreting the results of the urinalysis, clinicians should focus on the presence or absence of glucosuria, proteinuria, hematuria, and infection.[2]

The IPSS is a validated, self-administered questionnaire that provides clinicians with insight into the severity and frequency of LUTS. The tool includes 7 questions focused on urinary symptoms—4 on voiding-related symptoms (weak stream, intermittency, straining, and incomplete emptying) and 3 on storage-related symptoms (frequency, urgency, and nocturia)–rated on a scale from 0 (not at all) to 5 (almost always). A separate QoL question assesses the patient's perception of their urinary condition, rated from 0 (delighted) to 6 (terrible): "If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?"[2,11]

The IPSS was first called the AUA Symptom Index (AUA-SI) and both are identical in content, but the AUA-SI excludes the QoL question. Both tools aid in quantifying symptom burden and guiding further evaluation.[2]

Additional diagnostic tests may be conducted to confirm the diagnosis or evaluate the presence and severity of BPH[2]:

- Post-void residual (PVR) urine volume measurement, after voiding, helps assess bladder-emptying and can detect significant urinary retention and/or indicate detrusor dysfunction. Although no universally accepted definition of clinically significant residual urine exists, trends in PVR measurements over time can inform management decisions.
- Uroflowmetry is a simple and risk-free, office-based procedure that can be an important adjunct in the evaluation of LUTS.
- Pressure flow studies can help differentiate urinary retention related to detrusor underactivity, detrusor sphincter dyssynergia, or obstruction due to prostatic enlargement.

Identifying the underlying cause of LUTS can be challenging due to the frequent coexistence of voiding and storage symptoms. While BPH is commonly linked to voiding issues, along with feelings of incomplete bladder-emptying, many men also report storage symptoms like urgency and nocturia. This symptom overlap increases the risk of misdiagnosing OAB as BPH, or overlooking OAB entirely, underscoring the importance of a thorough, symptom-specific evaluation to accurately differentiate between these conditions.[1] (Figure 2)

In the management of bothersome LUTS, it is important that healthcare providers recognize the complex dynamics of the bladder, bladder neck, prostate, and urethra. Further, symptoms may result from interactions of these organs as well as with the central nervous system or other systemic diseases (e.g., metabolic syndrome, congestive heart failure).[2]

Clinical Perspective: The Importance of Validated, Patient-Administered Symptom Assessment

The AUA Guideline on Management of LUTS/BPH recommends incorporating tools such as the IPSS and QoL questionnaires that can provide critical insights into how symptoms are affecting daily living and guide personalized treatment decisions.[2]

Management of Urinary Symptoms in Patients with BPH

The primary goals in managing LUTS attributed to BPH are to alleviate bothersome symptoms and prevent disease progression and complications, such as acute urinary retention (AUR). According to the AUA Guideline on Management of LUTS/BPH, treatment decisions should follow a shared decision-making approach. After the initial evaluation, clinicians and patients should collaborate to determine the patient's needs and most appropriate therapy.[2]

Further, the AUA/SUFU Guideline on OAB[10] represents a shift from earlier treatment frameworks. Unlike the previous AUA/SUFU Guideline on OAB,[14] which utilized a stepwise, tiered therapy approach, the updated Guideline eliminates step therapy in favor of a patient-centered approach. This emphasizes shared decision-making between the clinician and patient to select individualized treatment options based on the patient's symptom burden, treatment goals, lifestyle preferences, and tolerance for potential side effects.[10]

The AUA/SUFU Guideline on OAB features 33 statements that cover the evaluation and diagnosis of the patient with symptoms suggestive of OAB, with discussion of treatment options, as well as offering guidance in the management of patients with OAB and BPH.[10]

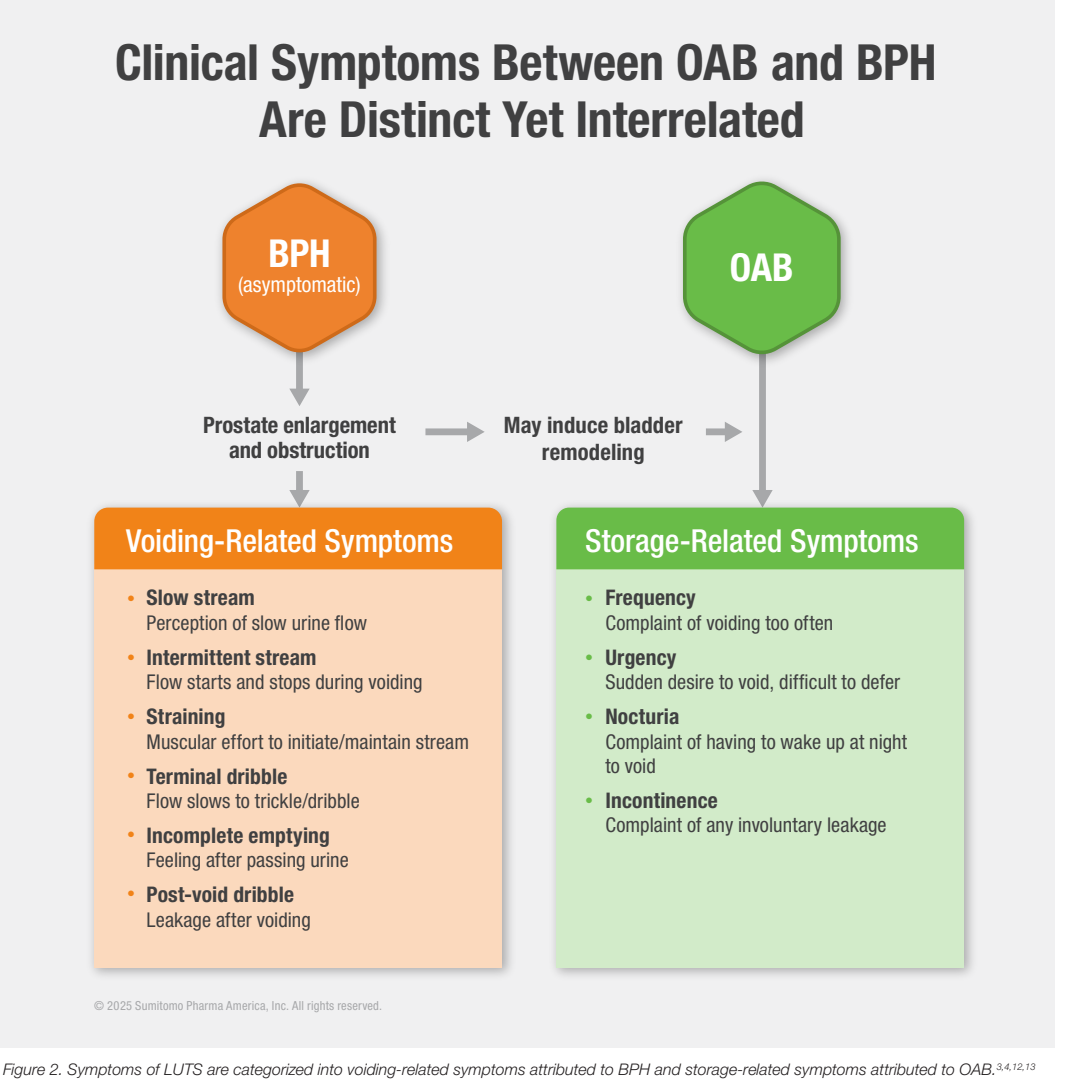

Figure 2. Symptoms of LUTS are categorized into voiding-related symptoms attributed to BPH and storage-related symptoms attributed to OAB.[3,4,12,13]

Clinical Perspective: Moving Beyond Stepwise Therapy

The AUA/SUFU Guideline on OAB eliminates the traditional stepwise approach, advocating for shared decision-making that prioritizes patient-specific goals, lifestyle preferences, and tolerance for potential side effects. This shift empowers patients to actively participate in their care, ensuring treatments align with their unique needs.[10]

Treatment of OAB in Men with BPH

Overview of Treatment Approaches

Once a diagnosis of BPH with coexisting OAB has been established, treatment should be guided by shared decision-making between the clinician and patient, in accordance with the AUA/SUFU Guideline on OAB. Therapy may include non-invasive options, pharmacologic therapies, minimally invasive interventions, or invasive therapies, depending on the patient's symptom severity, treatment goals, and tolerance for potential side effects.[10] (Figure 3)

Conservative Therapy

The AUA/SUFU Guideline on OAB categorizes behavioral and non-invasive therapies as forms of conservative therapy. Conservative therapy encompasses non-surgical, non-pharmacologic interventions and is an important consideration for all patients with OAB symptoms, including those with BPH.[10]

Behavioral Therapy

Behavioral interventions should be offered to all patients with OAB. These involve self-managed strategies supported by education or training, aimed at reducing urinary symptoms through lifestyle adjustments. Examples include[10]:

- Bladder training and timed voiding
- Fluid management
- Limiting bladder irritants, such as caffeine and alcohol

Behavioral therapy is low-cost with an excellent risk-benefit ratio, offering symptom improvement with minimal adverse effects (AEs). However, long-term success often depends on patient adherence and commitment, which can vary. Patients should be counseled on the importance of compliance to maximize outcomes.[10]

Non-Invasive Therapy

Non-invasive therapies involve patient participation with guidance from healthcare professionals. Key examples include[10]:

- Pelvic floor muscle training (PFMT)
- Magnetic stimulation of the pelvic floor

Non-invasive therapies share the safety and low-risk profile of behavioral therapies but may incur higher costs due to the need for specialized devices or professional supervision. Similar to behavioral therapy, patient compliance is essential for success.[10]

Pharmacologic Therapy

For patients with persistent or bothersome voiding-related and/or storage-related symptoms, pharmacologic options may be introduced. Clinicians may consider pharmacologic interventions among patients with predominant OAB symptoms and who happen to have BPH. The pharmacologic options to treat OAB symptoms in this setting include antimuscarinics, beta-3 agonists, alpha adrenergic antagonists, 5-alpha-reductase inhibitors, and phosphodiesterase-5 inhibitors.[10] (Figure 4)

Monotherapy

According to the AUA/SUFU Guideline on OAB, for patients with OAB who present with predominantly storage-related LUTS (such as urgency, frequency, and/or urinary urgency incontinence), monotherapy with either an antimuscarinic or a beta-3 adrenergic agonist is considered an appropriate treatment option.[10] Both drug classes target bladder overactivity:

- Antimuscarinic medications (a subgroup of the anticholinergic class) inhibit involuntary detrusor contractions by blocking muscarinic receptors in the bladder, reducing urgency and frequency.[15] However, the AUA advises caution with antimuscarinic use, particularly in those with other medical conditions (e.g., narrow-angle glaucoma, impaired gastric emptying, or a history of urinary retention). More research is needed for those who have high prevalence of OAB and suffer disproportionately, such as older adults. The potential cognitive effects of antimuscarinics should be considered as well.[10] A post-void residual (PVR) measurement is recommended before initiating therapy to assess for potential urinary retention.[10]
- Beta-3 adrenergic agonists, such as vibegron or mirabegron, relax the detrusor muscle, increasing bladder capacity[16] with less side effects than anticholinergics.[10] A retrospective population-based cohort study with mirabegron demonstrated that patients with OAB symptoms treated with beta-3 adrenergic agonists had a lower risk of dementia compared to those treated with anticholinergics.[10,19]

Diagnosis and Treatment of Idiopathic Overactive Bladder

PRESENTATION OF OAB SYMPTOMS

Treatment-naïve patient presents with symptoms of OAB (urinary urgency, frequency, with or without urgency incontinence)

CONFIRM OAB DIAGNOSIS

Conduct:

- Medical history, including urologic history, assessing storage and emptying urinary symptoms, severity, degree of bother
- Physical examination
- Urinalysis
- PSA test in the appropriate patient population
- +/- symptom questionnaires and/or fluid intake and voiding diary
- +/- PVR, especially in those with concomitant voiding or emptying symptoms

OAB DIAGNOSIS SUPPORTED

Engage in Shared Decision-Making with the Patient:

- Optimize management of medical comorbidities (e.g., obesity, constipation, obstructive sleep apnea)
- Provide education about OAB
- Discuss the risks/benefits of different treatment modalities, as well as the option of no treatment
- Discuss patient values, preferences, and treatment goals

OAB TREATMENT OPTIONS

Clinicians have the option to use monotherapy or a combination of therapies

Clinicians can combine or change therapies if the patient:

- is unwilling or unable to undergo certain therapies
- has intolerable side effects
- does not have adequate symptom improvement

NON-INVASIVE OPTIONS

- Incontinence management strategies (e.g., pads, diapering, barrier creams)
- Bladder training/timed voiding
- Behavioral therapies
- Pelvic floor muscle training

PHARMACOLOGIC THERAPIES*

- Antimuscarinic medications or beta-3 agonist
- Select therapy in the context of shared decision-making, based on side effect profiles
- Discuss risks and contraindications of antimuscarinic medications
- Assess at 4-8 weeks for onset of side effects and efficacy

OAB + BPH

In OAB patients with BPH, options include:

- Monotherapy with an antimuscarinic medication or beta-3 agonist
- Combination therapy with alpha blocker and an antimuscarinic medication or beta-3 agonist
- Conservative therapy, pharmacologic therapy, or procedural interventions

MINIMALLY INVASIVE THERAPIES†

- Botulinum toxin injection‡
- Implantable tibial nerve stimulation
- Percutaneous tibial nerve stimulation
- Sacral neuromodulation

For patients severely impacted by OAB who have not responded to other therapies

INVASIVE THERAPIES

- Bladder augmentation cystoplasty or urinary diversion
- Indwelling urethral catheters when OAB therapies are contraindicated, ineffective, or no longer desired

BPH, benign prostatic hyperplasia; OAB, overactive bladder; PSA, prostate-specific antigen; PVR, post-void residual.

* If patient experiences intolerable side effects or inadequate symptom improvement, clinician can/may prescribe different medication of same or different class. If patient has inadequate symptom improvement with single medication, consider combination with medication of a different class.

† These therapies may be offered without trial of behavioral, non-invasive, or pharmacologic management. If patient is refractory to one treatment, clinician can try another. Consider a trial off of pharmacologic therapy after appropriate response has been achieved via minimally invasive therapies.

‡ Obtain PVR prior to injection, if not previously obtained.

Figure 3. Idiopathic OAB diagnosis and treatment options infographic is adapted from AUA/SUFU Guideline on OAB algorithm.[10]

Combination Therapy

When monotherapy fails to provide adequate relief, conservative therapies can be combined with each other or with pharmacologic therapy. While some evidence suggests potential additive effects, conclusions are not definitive. Patients should be counseled on the benefits and limitations of combination approaches.[10]

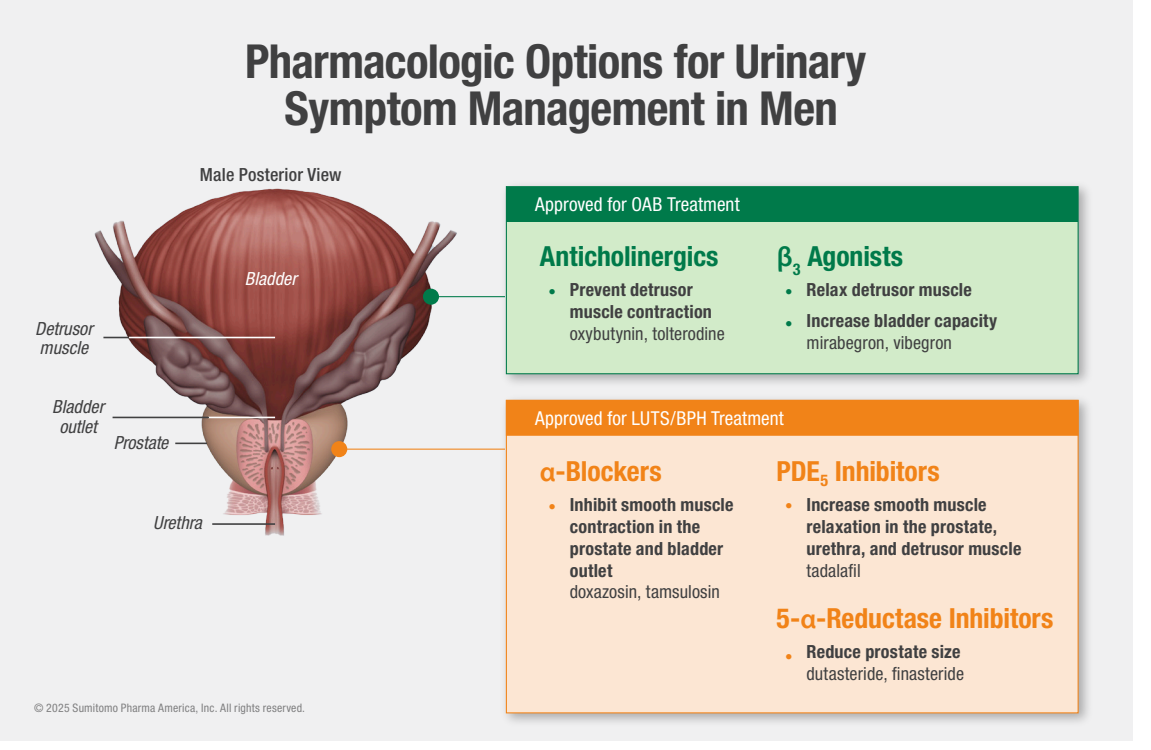

Figure 4. Five key medication classes used to manage storage-related[10,16,17,18] and voiding-related[10,16] symptoms and (Illustration adapted from Tortora[24])

Combination Therapy for Storage-Related Symptoms

In BPH patients with predominantly OAB-related symptoms, therapies* may include[10]:

- **Anticholinergic therapy** in combination with an **α-blocker**
- **Beta-3 adrenergic agonist therapy** in combination with an **α-blocker**

Considerations with Anticholinergic Use

While anticholinergics have long been a mainstay for OAB treatment, recent guidelines urge caution, particularly in older adults.[20]

- The 2023 American Geriatrics Society Beers Criteria® strongly recommend avoiding anticholinergics (e.g., oxybutynin, solifenacin, tolterodine) in adults ≥65 years due to risks of cognitive decline, delirium, falls, and fractures.[21]
- The 2021 American Urogynecologic Society (AUGS) consensus statement highlights the association between anticholinergic use and cognitive impairment, recommending beta-3 adrenergic agonists over anticholinergics in female patients >70 years.[22]
- A 2022 SUFU white paper suggests that cognitive risks should be considered regardless of age, noting that chronic anticholinergic use (>3 months) is linked to increased dementia risk. When pharmacologic therapy is necessary, beta-3 adrenergic agonists are typically preferred as first-line agents.[23]

* Monotherapy may also be offered with either an anticholinergic therapy or beta-3 agonist.

Additionally, the AUA Guideline on Management of LUTS/BPH recommends that clinicians obtain a PVR measurement, which may drive management choices. The benefits and risks of anticholinergic therapy should be carefully weighed and discussed with the patient and caregivers.[2]

The choice between these therapies should be based on shared decision-making, considering the patient's comorbidities, treatment preferences, and tolerance for potential side effects.

Real-World Treatment Patterns in Men with OAB and BPH

While α-blockers are commonly prescribed as first-line therapy for men with BPH, storage-related LUTS often remain bothersome in up to 66% of these patients, as these treatments primarily target voiding symptoms and do not address OAB-related storage issues.[1,25]

A US retrospective, observational study of claims databases (2012-2017) analyzed treatment patterns among 462,400 men (aged ≥40 years) diagnosed or treated for OAB and/or BPH symptoms.[1] The findings revealed a notable disparity in how these conditions were managed: (Figure 5)

- BPH medications were prescribed at a rate that exceeded formal BPH diagnoses.[1]
- In contrast, treatment for OAB (7.0%) was far less common relative to formal OAB diagnoses (25.8%).[1]

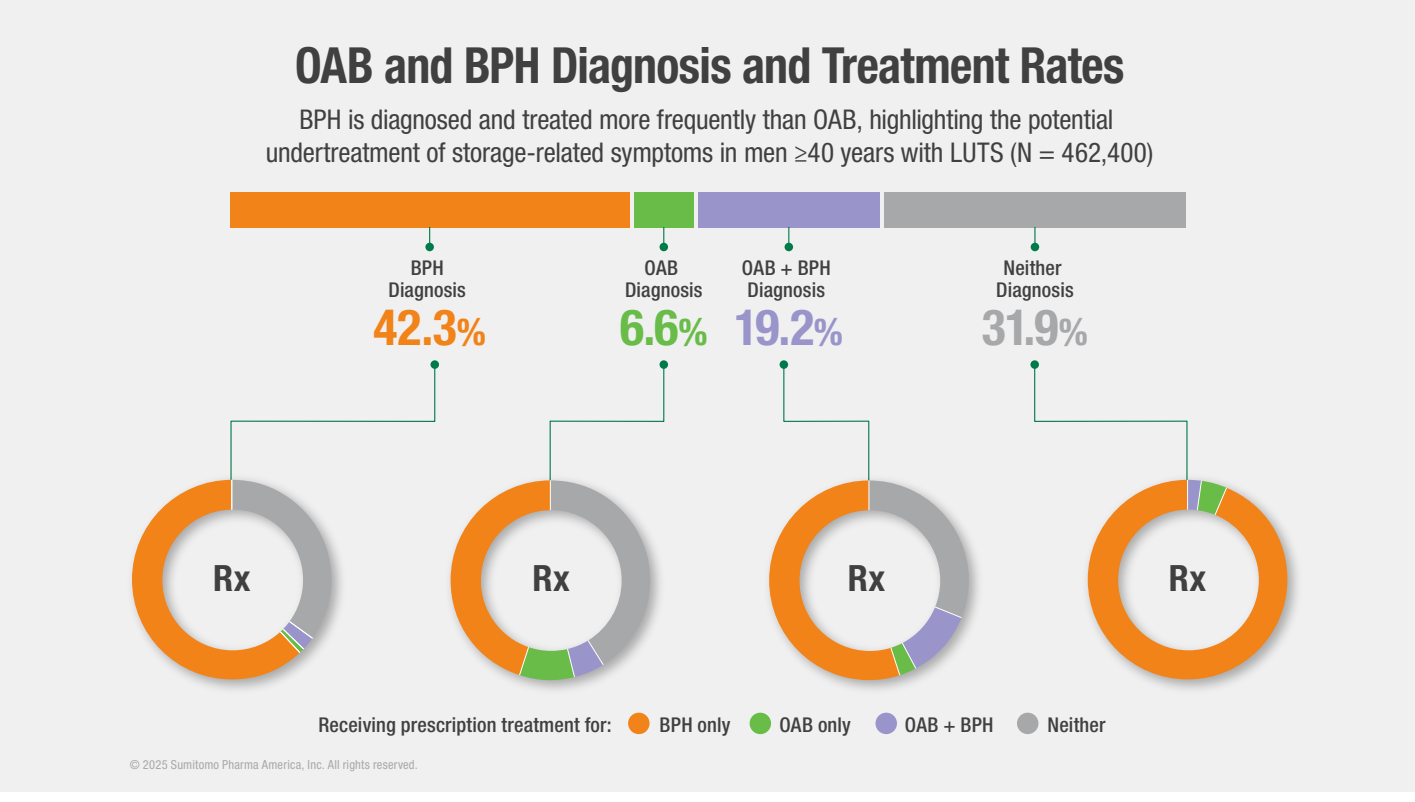

Figure 5. Retrospective analysis of MarketScan Commercial and Medicare Supplemental databases (2012-2017), including 462,400 men ≥40 years, diagnosed or medically treated for OAB and/or BPH[1]

This study suggests that men with OAB symptoms are often undertreated, with BPH being more frequently diagnosed and managed than OAB. Among those diagnosed, 64.6% of men with BPH received corresponding medication, compared to only 13.8% of men with OAB symptoms.[1]

Furthermore, the study showed that:

- The majority of men (93.4%) received only a single type of treatment.[1]
- Among participants, 6.6% received a secondary treatment, and 3.5% received tertiary treatment.[1]
- For those receiving 2 or more treatments, the most common secondary therapy was an OAB medication (48%), followed by a BPH procedure (24%), additional BPH medication (17%), and OAB + BPH combination therapy (10%).[1]

These patterns suggest that initial misdiagnosis of OAB as BPH may contribute to ineffective treatment.[1]

Summary

Diagnosing and treating OAB in men with BPH requires navigating the overlap of storage and voiding symptoms, which can complicate accurate identification and lead to undertreatment of OAB. The AUA/SUFU Guideline on OAB highlights the need for individualized care through shared decision-making, moving beyond traditional stepwise approaches.[10] Emphasizing a comprehensive evaluation of symptoms ensures that both OAB and BPH are properly addressed. Understanding these nuances supports more tailored and effective management strategies.

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