

Update on AUA Guideline on the Management of Benign Prostatic Hyperplasia

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Purpose: To revise the 2003 version of the American Urological Association's (AUA) Guideline on the management of benign prostatic hyperplasia (BPH).

Materials and Methods: From MEDLINE® searches of English language publications (January 1999 through February 2008) using relevant MeSH terms, articles concerning the management of the index patient, a male ≥ 45 years of age who is consulting a healthcare provider for lower urinary tract symptoms (LUTS) were identified. Qualitative analysis of the evidence was performed. Selected studies were stratified by design, comparator, follow-up interval, and intensity of intervention, and meta-analyses (quantitative synthesis) of outcomes of randomized controlled trials were planned. Guideline statements were drafted by an appointed expert Panel based on the evidence.

Results: The studies varied as to patient selection; randomization; blinding mechanism; run-in periods; patient demographics, comorbidities, prostate characteristics and symptoms; drug doses; other intervention characteristics; comparators; rigor and intervals of follow-up; trial duration and timing; suspected lack of applicability to current US practice; and techniques of outcomes measurement. These variations affected the quality of the evidence reviewed making formal meta-analysis impractical or futile. Instead, the Panel and extractors reviewed the data in a systematic fashion and without statistical rigor. Diagnosis and treatment algorithms were adopted from the 2005 International Consultation of Urologic Diseases. Guideline statements concerning pharmacotherapies, watchful waiting, surgical options and minimally invasive procedures were either updated or newly drafted, peer reviewed and approved by AUA Board of Directors.

Conclusions: New pharmacotherapies and technologies have emerged which have impacted treatment algorithms. The management of LUTS/BPH continues to evolve.

Key Words: prostatic hyperplasia, urinary retention, adrenergic alpha-antagonists, 5-alpha-reductase inhibitors, behavior therapy, transurethral resection of prostate

The complete guideline is available at www.AUAnet.org/BPH2010.

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BENIGN prostatic hyperplasia is a histologic diagnosis that refers to smooth muscle and epithelial cell prolifera-

tion within the prostatic transition zone.¹ The enlarged gland has been proposed to contribute to lower uri-

Abbreviations and Acronyms

5-ARIs = 5-alpha-reductase inhibitors

BOO = bladder outlet obstruction

BPH = benign prostatic hyperplasia

CAM = complementary and alternative medications

ED = erectile dysfunction

HoLRP/HoLEP/HoLAP = holmium laser resection/enucleation/ablation of the prostate

IFIS = intraoperative floppy iris syndrome

LUTS = lower urinary tract symptoms

PSA = prostate specific antigen

QoL = quality of life

TUIP = transurethral incision of the prostate

TUMT = transurethral microwave thermotherapy

TUNA = transurethral needle ablation of the prostate

TURP = transurethral resection of the prostate

TUVP = transurethral vaporization of the prostate

UTI = urinary tract infection

nary tract symptom via at least two routes (1) direct bladder outlet obstruction (static component) and (2) increased smooth muscle tone and resistance (dynamic component). In the management of bothersome LUTS, it is important that healthcare providers recognize the complex interactions of the bladder, bladder neck, prostate and urethra, and that symptoms may result from interactions of these organs as well as the central nervous system. The 2010 BPH Guideline attempts to acknowledge that LUTS represents a broad spectrum of etiologies, and focuses on the management of such symptoms.

LUTS in the aging male can have a marked impact on individual health and society at large.^{2,3} Although LUTS secondary to BPH (LUTS/BPH) is not often life-threatening, the impact of LUTS/BPH on quality of life can be significant. Traditionally, the primary treatment goal has been to alleviate bothersome LUTS. More recently, treatment has addressed the prevention of disease progression.⁴ This Guideline reviews a number of important aspects in the management of LUTS/BPH including diagnostic tests to identify the underlying pathophysiology and symptom management. Complementary and alternative medications, watchful waiting, and lifestyle issues are addressed. The current literature on the standard surgical options and on minimally invasive procedures is also reviewed.

Recently, the association between LUTS and erectile dysfunction has been clarified. Lifestyle factors – such as exercise, weight gain and obesity – also appear to have an impact on LUTS. We expect these risk factors to grow in importance with the aging of the male population and the obesity epidemic. The expected increase in prevalence will place increased demands on the health system and put a premium on efficient, evidence-based management in both primary and specialty care.

DEFINITIONS AND TERMINOLOGY

For the 2010 Guideline, the **Index Patient** is a male ≥ 45 years of age who is consulting a qualified healthcare provider for his LUTS. He does not have a history suggesting non-BPH causes of LUTS and his LUTS may or may not be associated with an enlarged prostate gland, BOO, or histological BPH. **Lower urinary tract symptoms** include storage and/or voiding disturbances common in aging men and can be due to structural or functional abnormalities in one or more parts of the LUT or abnormalities of the peripheral and/or central nervous systems that provide neural control of the LUT. LUTS may also be secondary to cardiovascular, respiratory or renal disease.

METHODOLOGY

The 2010 guideline statements were based on a systematic review and synthesis of the literature on current therapies for the treatment of BPH. The methodology followed the same process used in the development of the 2003 Guideline and, as such, did not include an evaluation of the strength of the body of evidence as will be instituted in future Guidelines produced by the American Urological Association. The full Guideline document including methodology can be accessed at <http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines.cfm>.

The guideline statements (indicated as bolded text in this paper) were drafted by the Panel based on evidence and tempered by the Panel's expert opinion. As in the previous Guideline, these statements were graded using three levels of flexibility in their application. A "standard" has the least flexibility as a treatment policy; a "recommendation" has significantly more flexibility; and an "option" is even more flexible.

DIAGNOSTIC EVALUATION OF THE INDEX PATIENT

After review of the recommendations for diagnosis published by the 2005 International Consultation of Urologic Diseases⁵ and reiterated in 2009⁶, the Panel unanimously agreed that the contents remain valid and reflected "best practices." The diagnostic guidelines can be found at www.AUAnet.org/BPH2010.

Basic Management

The algorithm describing basic management classifies diagnostic tests as either recommended (should be performed on every patient during the initial evaluation) or optional (test of proven value in the evaluation of select patients) (fig. 1). In general, optional tests are performed during a detailed evaluation by a urologist. If the initial evaluation reveals the presence of LUTS associated with results of a digital rectal exam suggesting prostate cancer, hematuria, abnormal prostate-specific antigen levels, recurrent urinary tract infection, palpable bladder, history/risk of urethral stricture, and/or a neurological disease raising the likelihood of a primary bladder disorder, the patient should be referred to a urologist for appropriate evaluation before treatment. Baseline renal insufficiency appears to be no more common in men with BPH than in men of the same age group in the general population.

Not Recommended: The routine measurement of serum creatinine levels is not indicated in the initial evaluation of men with LUTS secondary to BPH.

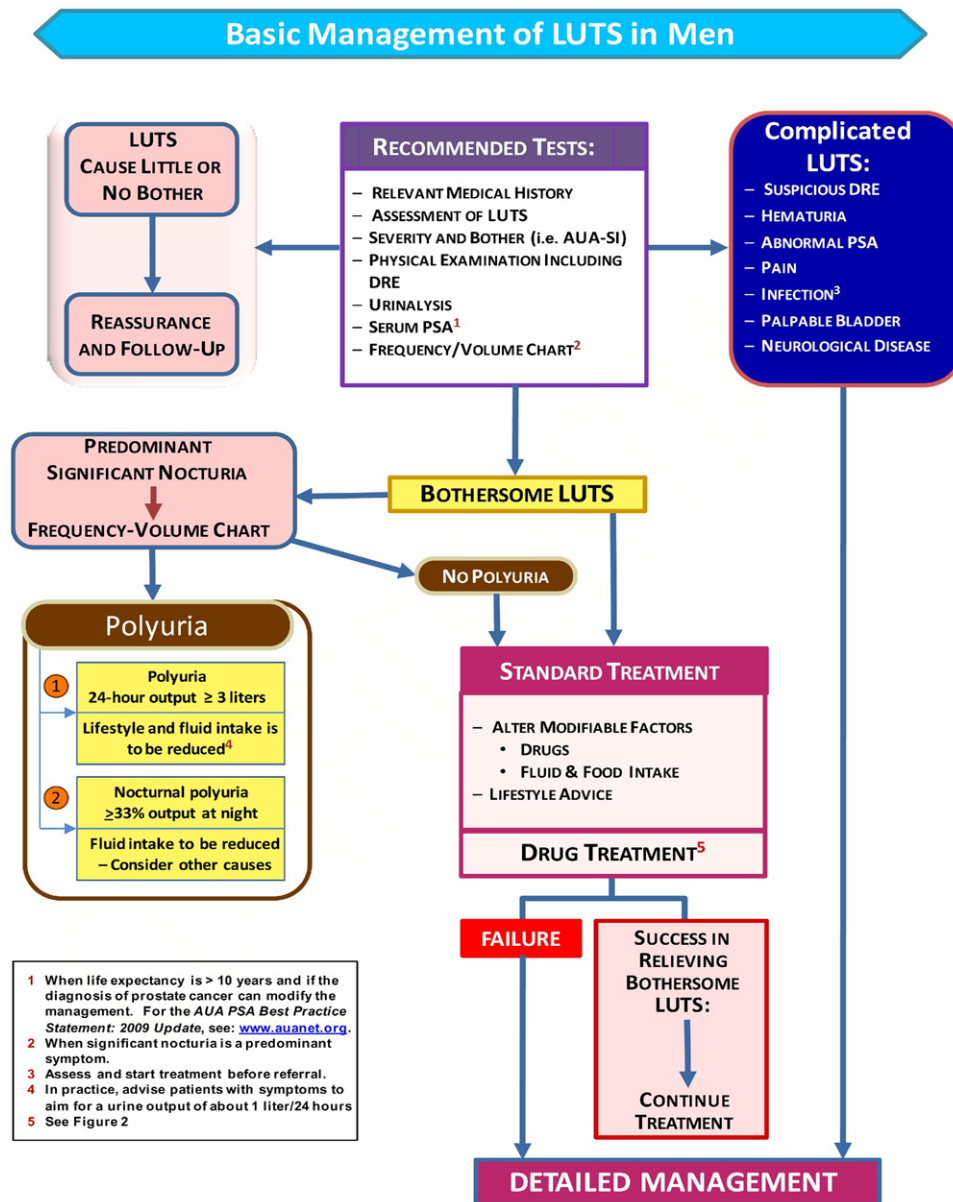


Figure 1. Basic management of lower urinary tract symptoms in men⁶

[Based on review of the data and Panel consensus.]

The physician can discuss the benefits and risks of treatment alternatives with the patient based on the results of the initial evaluation with no further testing (See Figure 1). The treatment choice is reached in a shared decision-making process between the clinician and patient. If treatment is successful and the patient is satisfied, yearly follow-up with re-evaluation will detect progressive disease.

Detailed Management

If the patient's LUTS are being managed by a primary care giver and the patient has persistent both-

ersome LUTS after basic management, a urologist should be consulted. The urologist may use testing beyond that recommended for basic evaluation (fig. 2). If drug therapy is considered, decisions will be influenced by coexisting overactive bladder symptoms and prostate size or serum PSA levels (fig. 2). The decision for choice of therapy should be in concert with the patient's preferences.

If storage symptoms predominate, an overactive bladder due to idiopathic detrusor overactivity is the most likely cause if there is no indication of BOO from a flow study. The treatment options of lifestyle intervention (fluid intake alteration), behavioral modification and pharmacotherapy (anticholinergic

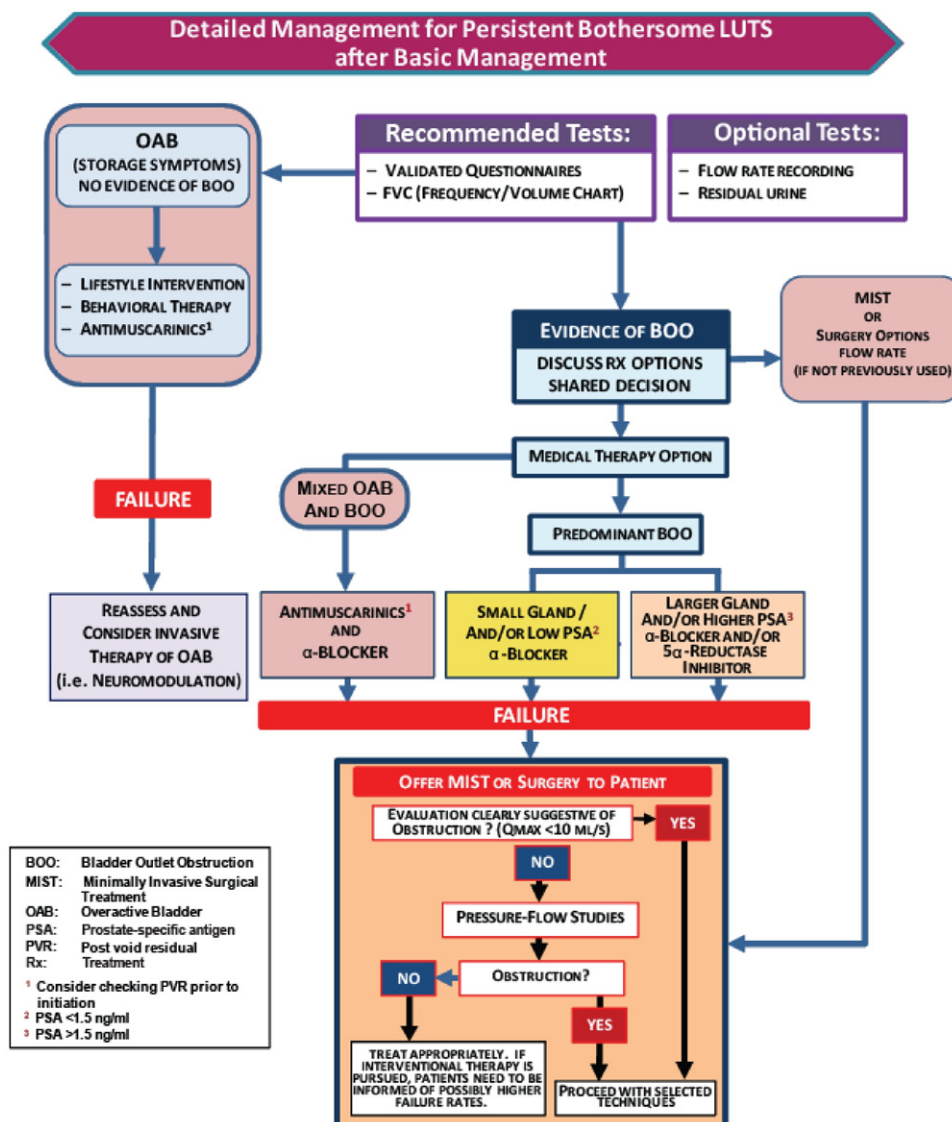


Figure 2. Detailed management of persistent, bothersome lower urinary tract symptoms after basic management⁶

drugs) should be discussed with the patient. **It is the expert opinion of the Panel that some may benefit using a combination of all three modalities. Should improvement be insufficient and symptoms severe, then newer modalities can be considered.** It is recommended that the patient be followed to assess treatment outcome.

Interventional Therapy

If the patient elects interventional therapy and there is sufficient evidence of obstruction, patient and urologist should discuss the benefits and risks of the various interventions. Transurethral resection is still the gold standard but, when available, new therapies could be discussed.

If the patient's condition does not suggest obstruction (e.g., maximum flow rate > 10 mL/sec) pressure flow studies are optional as treatment fail-

ure rates are higher in the absence of obstruction. If therapy is planned without evidence of obstruction, the patient needs to be informed of possible higher procedure failure rates.

Treatment Alternatives

The patient must be informed of all treatment alternatives applicable to his clinical condition and the related benefits and risks so that he may participate in decision making. The treatment choices listed in Table 1 are discussed in this article with the supporting evidence presented in Chapter 3 of the Guideline (www.AUAnet.org/BPH2010).

Standard: Information on the benefits and harms of treatment alternatives for LUTS secondary to BPH should be explained to patients with moderate to severe symp-

Treatment alternatives for patients with moderate to severe symptoms of benign prostatic hyperplasia

Watchful Waiting

Medical Therapies

Alpha-adrenergic blockers

Alfuzosin

Doxazosin

Tamsulosin

Terazosin

Silodosin*

5-Alpha-reductase inhibitors

Dutasteride

Finasteride

Combination therapy

Alpha blocker and 5-alpha-reductase inhibitor

Alpha blocker and anticholinergics

Anticholinergic Agents

Complementary and Alternative Medicines (CAM)

Minimally Invasive Therapies

Transurethral needle ablation (TUNA)

Transurethral microwave heat treatments (TUMT)

Surgical Therapies

Open prostatectomy

Transurethral holmium laser ablation of the prostate (HoLAP)

Transurethral holmium laser enucleation of the prostate (HoLEP)

Holmium laser resection of the prostate (HoLRP)

Photoselective vaporization of the prostate (PVP)

Transurethral incision of the prostate (TUIP)

Transurethral vaporization of the prostate (TUVAP)

Transurethral resection of the prostate (TURP)

* Silodosin was approved by the US Food and Drug Administration but there were no published articles in the peer reviewed literature prior to the cut-off date for the literature search.

toms (AUA-SI score ≥ 8) who are bothered enough to consider therapy.

[Based on Panel consensus.]

Watchful Waiting. Watchful waiting (active surveillance) is the preferred strategy for mild symptoms. It is also an appropriate option for men with moderate-to-severe symptoms who have no complications of LUTS and BOO (e.g., renal insufficiency, urinary retention or recurrent infection). Watchful waiting patients usually are reexamined yearly, repeating the initial evaluation (Figure 1). As prostate volume predicts the natural history of symptoms, flow rate, risk for AUR (acute urinary retention) and surgery, patients may be advised as to their individual risk based on these measures.

Standard: Patients with mild symptoms of LUTS secondary to BPH (AUA-SI score < 8) and patients with moderate or severe symptoms (AUA-SI score ≥ 8) who are not bothered by their LUTS should be managed using a strategy of watchful waiting (active surveillance).

[Based on review of the data and Panel consensus.]

Alpha-Adrenergic Blockers (Alpha-Blockers). In studies, rates for specific alpha-blocker-associated adverse events were similar between treatment and placebo groups. Dizziness, the most common adverse event, was reported in 2% and 14% of patients and lower rates with placebo. The $\sim 10\%$ risk of ejaculatory disturbance cited in 2003 Guideline associated with tamsulosin was lower in recent studies that used alternate metrics to gauge dysejaculation.⁷

Although doxazosin and terazosin require dose titration and blood pressure monitoring, they are inexpensive, dosed once daily, and equally effective as tamsulosin and alfuzosin. In addition, they have generally similar side effect profiles, except ejaculatory dysfunction which has been reported less frequently with alfuzosin.

Data from the long-term Medical Therapy of Prostatic Symptoms study suggest that while AUR and surgery rates were lower with doxazosin compared to placebo in the early years of follow-up, by five years, rates were similar in both groups.⁴ The time-limited effect noted for doxazosin is likely a class effect. The second major combination therapy study was the four-year Combination Therapy with Avodart and Tamsulosin trial comparing tamsulosin, dutasteride and their combination; at present, only two-year data are published.⁷

Option: Alfuzosin, doxazosin, tamsulosin, and terazosin are appropriate and effective treatment alternatives for patients with bothersome, moderate to severe LUTS secondary to BPH (AUA-SI score ≥ 8). Although there are slight differences in the adverse event profiles of these agents, all four appear to have equal clinical effectiveness. As stated in the 2003 Guideline, the effectiveness and efficacy of the four alpha-blockers under consideration appear to be similar. Although studies directly comparing these agents are currently lacking, the available data support this contention.

(Silodosin was approved by the US Food and Drug Administration but there were no published articles in the peer-reviewed literature prior to the cut-off date for the literature search.)

[Based on review of the data and Panel consensus.]

Option: The older, less costly, generic alpha-blockers remain reasonable choices. These require dose titration and blood pressure monitoring.

[Based on Panel consensus.]

Recommendation: As prazosin and the nonselective alpha-blocker phenoxybenzamine

were not reviewed in the course of this Guideline revision, the 2003 Guideline statement indicating that the data were insufficient to support a recommendation for the use of these two agents as treatment alternatives for LUTS secondary to BPH has been maintained.

[Based on Panel consensus.]

Option: The combination of an alpha-blocker and a 5-alpha-reductase inhibitor (combination therapy) is an appropriate and effective treatment for patients with LUTS associated with demonstrable prostatic enlargement based on volume measurement, prostate-specific antigen level as a proxy for volume, and/or enlargement on DRE.

[Based on review of the data and Panel consensus.]

The intraoperative floppy iris syndrome is a triad of intraoperative miosis despite preoperative dilation, and billowing and prolapse of a flaccid iris, during phacoemulsification for cataracts. Complications have included posterior capsule rupture with vitreous loss and postoperative intraocular pressure spikes, though acuity outcomes appeared preserved. The original report linked this condition with the use of tamsulosin; iris dilator smooth muscle inhibition has been suggested as a potential mechanism.^{8,9} The evidence review supports the following conclusions:

- Risk of IFIS was substantial with tamsulosin in 10 retrospective and prospective studies.^{9–19}
- The risk of IFIS appears to be lower with older, generic alpha-blockers.^{9,13,18,19}
- Data to estimate the risk of IFIS with alfuzosin are insufficient.
- Whether the dose/duration or cessation of treatment preoperatively affects IFIS is unclear.
- Ophthalmologists aware of preoperative alpha-blocker use can take intraoperative precautions to reduce IFIS complications.^{8,14}

Recommendation: Men with LUTS secondary to BPH for whom alpha-blocker therapy is offered should be asked about planned cataract surgery. Men with planned cataract surgery should avoid the initiation of alpha blockers until their cataract surgery is completed.

[Based on review of the data and Panel consensus.]

Recommendation: In men with no planned cataract surgery, there are insufficient data to recommend withholding or dis-

continuing alpha-blockers for bothersome LUTS secondary to BPH.

[Based on review of the data and Panel consensus.]

5-Alpha-reductase Inhibitors. Finasteride (5 mg daily) inhibits the 5-AR type II isoenzyme while dutasteride (0.5 mg daily) inhibits both types I and II. There are no data from direct comparator trials or other sources to suggest that the clinical efficacy of the two 5-ARIs is different. Comparisons are difficult due to differences in study design and variations in the definition of prostate enlargement.

Option: 5-ARIs may be used to prevent progression of LUTS secondary to BPH and to reduce the risk of urinary retention and future prostate-related surgery.

[Based on review of the data and Panel consensus.]

Recommendation: 5-ARIs should not be used in men with LUTS secondary to BPH without prostatic enlargement.

[Based on review of the data and Panel consensus.]

Option: The 5-ARIs are appropriate and effective treatment alternatives for men with LUTS secondary to BPH who have demonstrable prostate enlargement.

[Based on review of the data and Panel consensus.]

5-Alpha-Reductase Inhibitors for Hematuria. Finasteride suppresses prostatic vascular endothelial growth factor (VEGF). Prostate-related bleeding was found to respond to finasteride; bleeding was reduced or ceased completely and recurrent bleeding decreased.^{20,21}

Option: Finasteride is an appropriate and effective treatment alternative in men with refractory hematuria presumably due to prostatic bleeding (i.e., after exclusion of any other causes of hematuria). A similar level of evidence concerning dutasteride was not reviewed; it is the expert opinion of the Panel that dutasteride likely functions in a similar fashion.

[Based on review of the data and Panel consensus.]

5-Alpha-Reductase Inhibitors for Prevention of Bleeding During Transurethral Resection of the Prostate. Several investigators studied the effect of presurgical treatment with a 5-ARI on TURP bleeding.^{22–27} One randomized and two nonrandomized studies found a reduction in blood loss or transfusion requirements.^{25–27}

Option: Overall, there is insufficient evidence to recommend using 5-ARIs preoperatively in the setting of a scheduled TURP to reduce intraoperative bleeding or reduce the need for blood transfusions.

[Based on review of the data and Panel consensus.]

Anticholinergic Agents. Three randomized trials evaluating the use of tolterodine as monotherapy or in combination with an alpha blocker in men with LUTS/BPH were identified.^{28–30} Although these trials do not sufficiently demonstrate the efficacy or effectiveness of tolterodine, the Panel concluded that the use of anticholinergics could benefit some patients.

Option: Anticholinergic agents are appropriate and effective treatment alternatives for the management of LUTS secondary to BPH in men without an elevated post void residual (PVR) urine and when LUTS are predominantly irritative.

[Based on Panel consensus.]

Recommendation: Prior to initiation of anticholinergic therapy, baseline PVR urine should be assessed. Anticholinergics should be used with caution in patients with a PVR greater than 250 to 300 mL.

[Based on Panel consensus.]

Complementary and Alternative Medicines. Non-conventional approaches to the management of LUTS/BPH are of interest to patients. Of particular appeal are dietary supplements, which include extracts of the saw palmetto plant (*Serenoa repens*) and stinging nettle (*Urtica dioica*). Since the publication of the 2003 Guideline, higher-quality evidence has appeared concerning the commonly-studied saw palmetto plant extract. Previous reviews suggested that saw palmetto may have modest efficacy. More rigorous studies showed no effects.^{31,32} More definitive evidence regarding the use of saw palmetto is forthcoming.

Recommendation: No dietary supplement, combination phytotherapeutic agent, or other nonconventional therapy is recommended for the management of LUTS secondary to BPH.

[Based on review of the data and Panel consensus.]

Recommendation: At this time, the available data do not suggest that saw palmetto has a clinically meaningful effect on LUTS secondary to BPH. Further clinical trials are in progress and the results of these studies will elucidate the potential value of saw

palmetto extract in the management of patients with BPH.

[Based on review of the data and Panel consensus.]

Recommendation: The paucity of published high quality, single extract clinical trials of *Urtica dioica* do not provide a sufficient evidence base with which to recommend for or against its use for the treatment of LUTS secondary to BPH.

[Based on review of the data and Panel consensus.]

Minimally Invasive Therapies

Standard: Safety recommendations for the use of transurethral needle ablation of the prostate and transurethral microwave thermotherapy published by the United States Food and Drug Administration should be followed: <http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/default.htm>.

[Based on review of the data.]

Transurethral Needle Ablation of the Prostate. TUNA is safe with low peri-operative complications making this therapy attractive. The Panel concluded that a degree of uncertainty remains regarding TUNA because of a paucity of high-quality studies.

Option: TUNA is an appropriate and effective treatment alternative for bothersome moderate or severe LUTS secondary to BPH.

[Based on review of the data and Panel consensus.]

Transurethral Microwave Thermotherapy (TUMT). TUMT is the least operator dependant of the interventions yet predicting responders is difficult. The systematic review of TUMT data revealed a mix of studies with different sample sizes, outcome measures, and follow-up durations leading to conflicting results. Thus, there is no compelling evidence to conclude that one device is superior to another.

Option: TUMT is effective in partially relieving LUTS secondary to BPH and may be considered in men with moderate or severe symptoms.

[Based on review of the data and Panel consensus.]

Surgical Procedures

Surgical intervention is appropriate for moderate-to-severe LUTS, AUR or other BPH-related complications. By definition, surgery is the most invasive option for BPH management and generally, patients will have failed medical therapy before proceeding

with surgery. However, some patients may pursue this therapy as a primary treatment. The decision for surgery may be based upon the patient's risk/benefit assessment. The 2003 Guideline recognized TURP as the benchmark therapy. Alternative technologies are reported to offer lower morbidity but are typically still performed in the operating room with anesthesia.

Recommendation: Surgery is recommended for patients who have renal insufficiency secondary to BPH, who have recurrent urinary tract infections (UTIs), gross hematuria due to BPH, or bladder stones, and who have LUTS refractory to other therapies. The presence of a bladder diverticulum is not an absolute indication for surgery unless associated with recurrent UTI or progressive bladder dysfunction.

[Based on review of the data and Panel consensus.]

Open Prostatectomy. Open prostatectomies may be needed only for men with very enlarged prostate glands, may be more effective than TURP in relieving BOO, and for men with bladder diverticula or stones.

Option: Open prostatectomy is an appropriate and effective treatment alternative for men with moderate to severe LUTS and/or who are significantly bothered by these symptoms. The choice of approach should be based on the patient's individual presentation including anatomy, the surgeon's experience, and discussion of the potential benefits and risks for complications. The Panel noted that there is usually a longer hospital stay and a larger loss of blood associated with open procedures.

[Based on review of the data and Panel consensus.]

Laser Therapies. Generally, transurethral laser approaches have been associated with shorter catheterization time and length of stay with comparable improvements in LUTS. There is a decreased risk of the perioperative complication of TUR syndrome. Information concerning certain outcomes including retreatment and urethral strictures is limited due to short follow-up. As with all new devices, comparison of outcomes between studies should be considered cautiously given the rapid evolution in technologies. Emerging evidence suggests a possible role of transurethral enucleation and laser vaporization as options even for men with very large prostates

(> 100 g). There are insufficient data on which to base comments on bleeding.

Option: Transurethral laser enucleation (holmium laser resection of the prostate [HoLRP], holmium laser enucleation of the prostate [HoLEP]), transurethral side firing laser ablation (holmium laser ablation of the prostate [HoLAP], and photoselective vaporization [PVP]) are appropriate and effective treatment alternatives to transurethral resection of the prostate and open prostatectomy in men with moderate to severe LUTS and/or who are significantly bothered by these symptoms. The choice of approach should be based on the patient's presentation, anatomy, the surgeon's level of training and experience, and discussion of the potential benefits and risks for complications.

[Based on review of the data and Panel consensus.]

Transurethral Incision of the Prostate. TUIP is an outpatient endoscopic procedure limited to the treatment of smaller prostates (≤ 30 mL). TUIP results in degrees of symptomatic improvement equivalent to those attained after TURP.^{33–36} TUIP results in a reduced risk of ejaculatory disturbance and a higher rate of secondary procedures.

Option: TUIP is an appropriate and effective treatment alternative in men with moderate to severe LUTS and/or who are significantly bothered by these symptoms when prostate size is less than 30 mL. The choice of approach should be based on the patient's individual presentation including anatomy, the surgeon's experience and discussion of the potential benefits and risks for complications.

[Based on review of the data and Panel consensus.]

Transurethral Vaporization of the Prostate. Compared to TURP, TUVF results in equivalent, short-term improvements in symptoms, flow rate, and QoL. Risk of TUR syndrome is reduced compared with monopolar TURP. However, the rates of postoperative irritative voiding symptoms, dysuria, urinary retention, and re-catheterization, appear higher. Reoperation rates were higher with TUVF than with TURP. Long-term comparative trials are needed to determine if TUVF is equivalent to standard TURP.

Option: TUVF is an appropriate and effective treatment alternative in men with moderate to severe LUTS and/or who are significantly bothered by these symptoms.

The choice of approach should be based on the patient's individual presentation including anatomy, the surgeon's experience and discussion of the potential benefit and risks for complications.

[Based on review of the data and Panel consensus.]

Transurethral Resection of the Prostate. TURP was the most common treatment for BPH but morbidities, desire to shorten catheterization and length of stay issues have stimulated the development of alternatives. The VA Cooperative Study found a 1% risk of urinary incontinence (similar to that reported with watchful waiting) and an overall decline in sexual function identical to patients randomized to watchful waiting.³⁷

Bipolar TURP utilizes a resectoscope loop that incorporates both active and return electrodes which limits current flow dispersal and reduces stray current flow. Because the bipolar resectoscope uses normal saline for irrigation, the risk of TUR syndrome is eliminated.

Option: TURP is an appropriate and effective primary alternative for surgical therapy in men with moderate to severe LUTS and/or who are significantly bothered by these symptoms. The choice of a monopolar or bipolar approach should be based on the patient's presentation, anatomy, the surgeon's experience and discussion of the potential risks and likely benefits.

[Based on review of the data and Panel consensus.]

Option: Overall, there is insufficient evidence to recommend using 5-ARIs in the setting of a pre-TURP to reduce intraoperative bleeding or reduce the need for blood transfusions.

[Based on review of the data and Panel consensus.]

Laparoscopic and Robotic Prostatectomy. Laparoscopic and robotic prostatectomies are currently associated with the treatment of prostate cancer but a single cohort study has reported on patients undergoing laparoscopic simple prostatectomy.³⁸ The operation takes longer than traditional surgery.

Option: Men with moderate to severe LUTS and/or who are significantly bothered by these symptoms can consider a laparoscopic or robotic prostatectomy. There are insufficient published data on which to base a treatment recommendation.

[Based on review of the data and Panel consensus.]

FUTURE RESEARCH

Given the aging population, BPH will be a major arena for research. There is a substantial need for a long-range vision to promote a better understanding of the etiology and management of BPH.³⁹ High priority research areas include:

- Obesity and lifestyle interventions
- Preventive strategies aimed at the underlying pathophysiology of BPH
- Studies that assess disease "phenotypes" and lead to better disease definitions
- Study of primary prevention for LUTS/BPH
- Plan for a multidisciplinary working group to develop a specific research agenda for symptom and health status measurement related to male LUTS
- Collaborative network to standardize treatment assessment

These topics illustrate the pressing need for improved methods to diagnose LUTS due to BPH and to predict progression; to develop new drug therapies; identify and test prevention strategies; and develop new non- or minimally invasive interventions. Progress in these areas has the potential to advance clinical care for BPH patients beyond symptom management, which in many cases are not uniformly effective across patients classified as having the same disorder.

ACKNOWLEDGMENTS AND DISCLAIMERS

This document was written by the BPH Guideline Panel of the American Urological Association Education and Research, Inc., which was created in 2006. The Practice Guideline Committee (PGC) of the AUA selected the committee chair. Panel members were selected by the chair. Membership of the committee included urologists and other physicians with specific expertise in this disorder. The mission of the committee was to develop recommendations that are analysis-based or consensus-based, depending on Panel processes and available data for optimal clinical practices in the diagnosis and surgical treatment of BPH. This document was submitted for peer review to 69 urologists and other healthcare professionals. After the final revisions were made, based upon the peer review process, the document was submitted to and approved by the PGC and the Board of Directors of the AUA. Funding of the committee was provided by the AUA. Committee members received no remuneration for their work. Each member of the committee provided a conflict of interest disclosure to the AUA.

AUA Guidelines provide guidance only, and do not establish a fixed set of rules or define the legal

standard of care. As medical knowledge expands and technology advances, the guideline statements will change. Today these guidelines statements represent not absolute mandates but provisional proposals for treatment under the specific conditions described in each document. For all these reasons, the guidelines do not pre-empt physician judgment in individual cases. Also, treating physicians must take into account variations in resources, and in patient tolerances, needs, and preferences. Conformance with AUA Guidelines cannot guarantee a successful outcome.

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