Benign Prostatic Hypertrophy

Paul M. Kozlowski, MD

Virginia Mason Franciscan Health
A member of CommonSpirit

Outline

- Definition
- Prevalence
- Clinical symptoms
- Work-up
- Medical management
- Surgical management
- Take Home Messages

Disclosures

- None

Virginia Mason Franciscan Health
A member of CommonSpirit

Lower Urinary Tract Symptoms Causes

BPH is just one of the causes of this problem

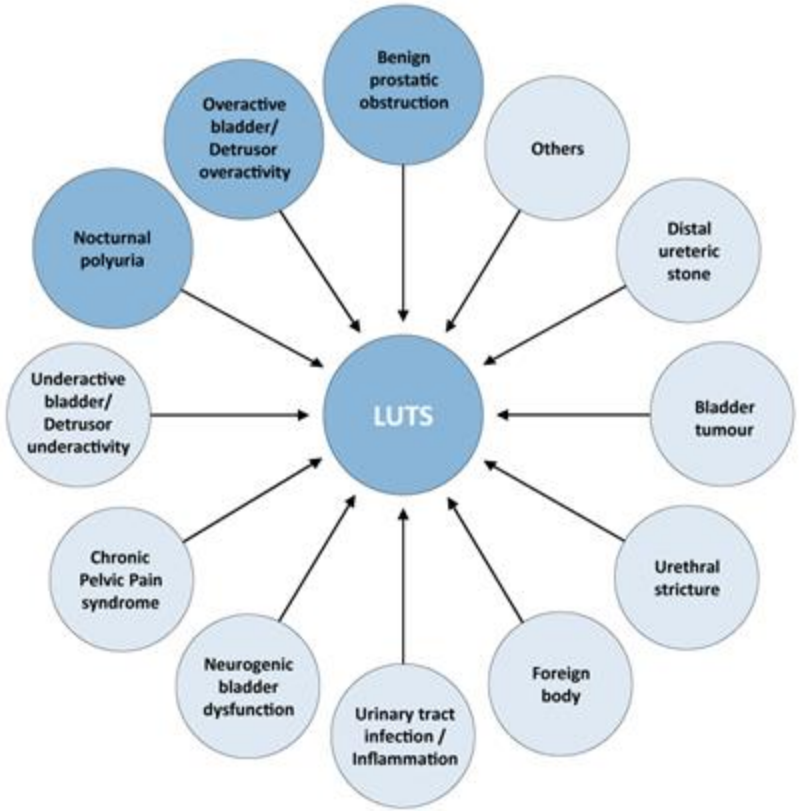
- OAB
- Urethral Stricture
- UTI
- Nocturnal Polyuria
- Distal ureteral stone
- Chronic pelvic pain syndrome

Virginia Mason Franciscan Health
A member of CommonSpirit

Mechanism of Action

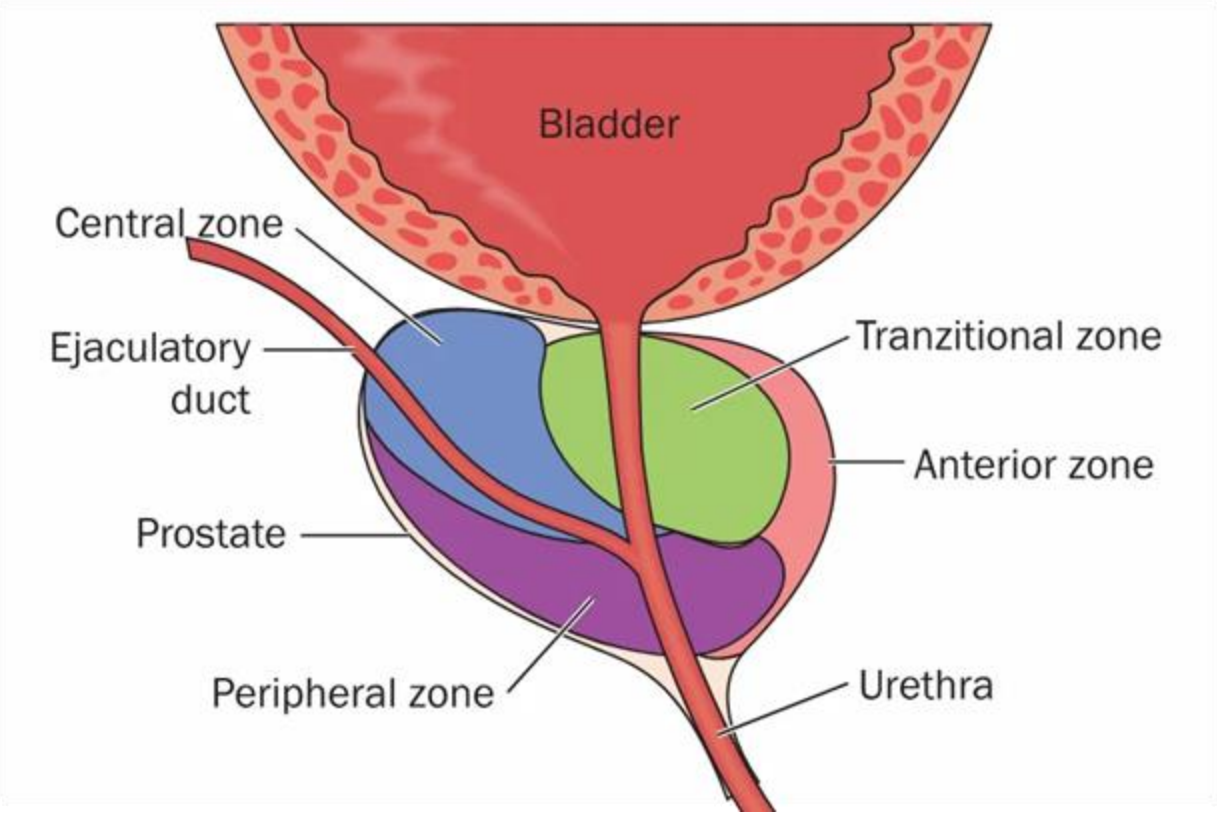
- Static component: Obstruction
- Dynamic component: Increased smooth muscle tone/resistance
- OAB primary vs secondary

- **“LUTS”**



Virginia Mason Franciscan Health
A member of CommonSpirit

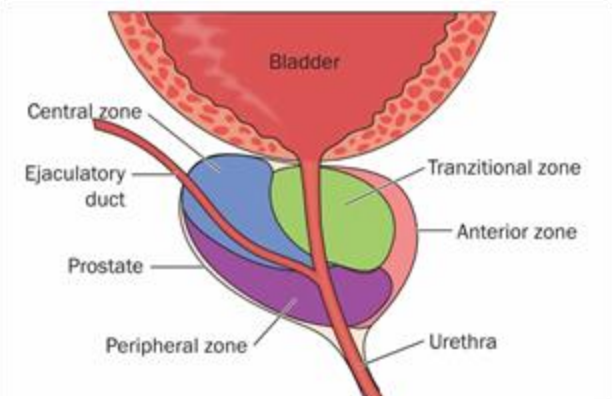
Prostate Anatomy



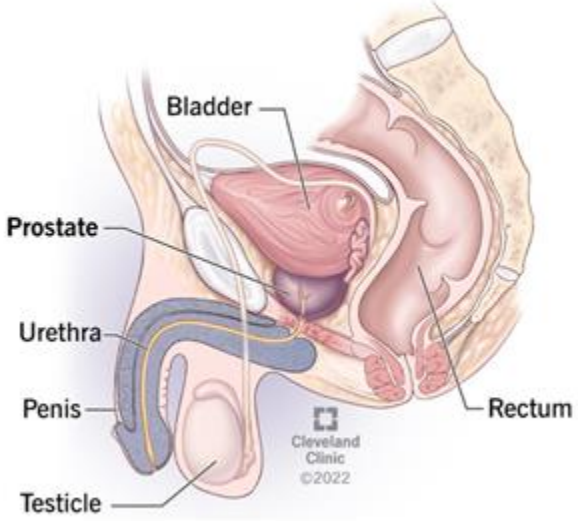
Virginia Mason Franciscan Health
A member of CommonSpirit

Definition of BPH

- Hyperplasia and hypertrophy are a histologic diagnosis.
- Proliferation of smooth muscle and epithelial cells in the transition zone.
- Complex diagnosis involving the bladder, bladder neck, prostate, and urethra.



Prostate



Cross section of the pelvis

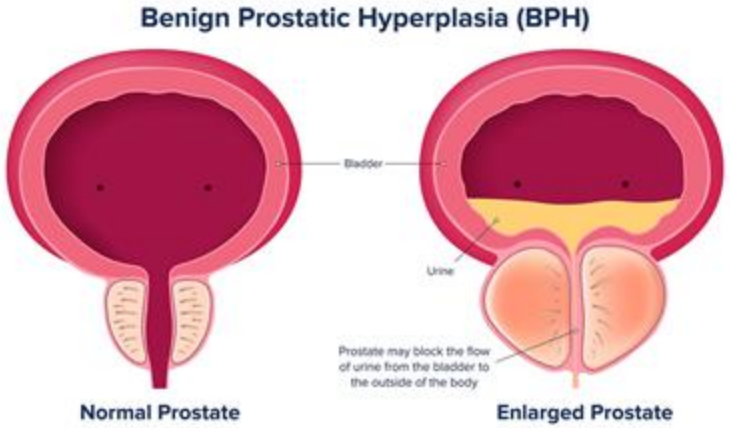
Virginia Mason Franciscan Health
A member of CommonSpirit

Definition

- Multifactorial process
- Exact etiology unknown
- Testosterone (DHT) dependent

Definition

- BPH is not prostate cancer
- BPH does not cause prostate cancer
- BPH and prostate cancer can co-exist
- Both can have elevated PSA



Virginia Mason Franciscan Health
A member of CommonSpirit

Definition

- Benign Prostatic: Hypertrophy vs Hyperplasia vs Enlargement
- Bladder Outlet Obstruction [BOO]
- Can have BPH w/o BOO
- LUTS: storage [OAB], voiding, post-micturition

Challenge in patients with LUTs

- Trying to determine obstructive vs irritative etiology

Virginia Mason Franciscan Health
A member of CommonSpirit

Prevalence

- Starts at age 40-45yo
- 50% in 60yo
- 90% by 85yo
- Onsets varies
- Growth rate varies
- Risks, obesity, DM, FH

Size doesn't matter!

BPE vs BOO

Virginia Mason Franciscan Health
A member of CommonSpirit

Symptoms of BPH

- Slow stream
- Frequent urination
- Incompletely emptying
- Nocturia
- Post-void dribbling
- Stop-start
- Retention

Virginia Mason Franciscan Health
A member of CommonSpirit

Nocturia

- 2 or more voids during sleep
- [excluding void before bed and first in morning]
  - Common in men and women
  - 20-25% in 50yo
  - 50% in 60yo

Virginia Mason Franciscan Health
A member of CommonSpirit

Nocturia

- Most difficult to treat
- Patient expectations
- Voiding diary is important possible nocturnal polyuria
  - *[50% of daily urine production at night]*
- R/O sleep apnea [ANP, OAB]

Clinical Evaluation

- Symptom scoring: IPSS/AUA questionnaire
- Initial assessment: H&P, UA
- Optional Diagnostics: PVR, uroflow, cystoscopy, volume study, urodynamics
- PSA [select pts]

Virginia Mason Franciscan Health
A member of CommonSpirit

International Prostate Symptom Score (I-PSS)							
In the past month:	Not at All	Less than 1 in 5 times	Less than Half the Time	About Half the Time	More than Half the Time	Almost Always	Your Score
1. Incomplete Emptying How often have you had the sensation of not emptying your bladder?	0	1	2	3	4	5	
2. **Frequency** How often have you had to urinate less than every two hours?	0	1	2	3	4	5	
3. Intermittency How often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency How often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream How often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining How often have you had to strain to start urination?	0	1	2	3	4	5	
	None	1 time	2 times	3 times	4 times	5 times	
7. Nocturia How many times did you typically get up at night to urinate?	0	1	2	3	4	5	
Total I-PSS Score							
Score:	1-7 Mild		8-19 Moderate		20-35 Severe		
		The first seven questions of the I-PSS are from the American Urological Association (AUA) Symptom Index					
Quality of Life Due to Urinary Symptoms							
	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly Dissatisfied	Unhappy	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?	**0**	**1**	**2**	**3**	**4**	**5**	**6**

Virginia Mason Franciscan Health
A member of CommonSpirit

Treatment

- Behavioral modification
- Medical therapy
- Surgical therapy

- Shared Decision-Making

Virginia Mason Franciscan Health
A member of CommonSpirit

Indication for Treatment:

Quality of Life

Virginia Mason Franciscan Health
A member of CommonSpirit

Behavioral Modification

- Double voiding
- Timed voiding
  - *[Bladder training]*
- Dietary changes
  - *[caffeine, alcohol, spicy foods]*
- Fluid restrictions
- Stress management
- Pelvic floor exercises

Virginia Mason Franciscan Health
A member of CommonSpirit

Supplements

- Saw Palmetto most common
- Many shortcomings in studies
  - STEP Trial *2008*
  - Camus Trial *2011*
- **No benefit proven**

Virginia Mason Franciscan Health
A member of CommonSpirit

Medical Treatment

- Alpha blockers (Introduced 1980's)
- 5-ARI's
- PDE-5 Inhibitors
- Beta-3
- Anticholinergic

FLOMAX® TAMSULOSIN HCl CAPSULES 0.4 MG

PROSCAR® (finasteride)

VIAGRA®

Virginia Mason Franciscan Health
A member of CommonSpirit

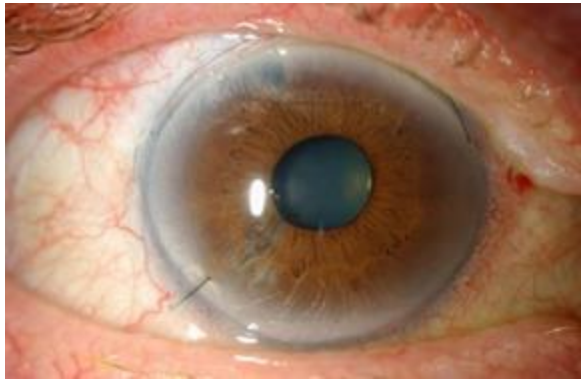
Alpha Blockers

- Usually firstline
- Terazosin, Doxazosin [dose titration]
- Flomax [Tamsulosin, 0.4, 0.8mg]
- Rapaflo [Silodosin, 4, 8mg, elderly pt less hypotension]
- Uroxatral [Alfuzosin, 10mg, younger pt less ejac problems]

- Prostate glands >70cc are not as effective

Alpha Blockers – *Side Effects*

- Orthostatic hypotension [15%]
- Sinus congestion [12%]
- Retrograde/Anejaculation [6%]
- Floppy Iris



Virginia Mason Franciscan Health
A member of CommonSpirit

Alpha Blockers

- Provide symptom relief within 2-4 weeks
- Similar efficacy among all drugs

Medical Therapy

Table 5: Effectiveness of Drug Therapies in Improving IPSS

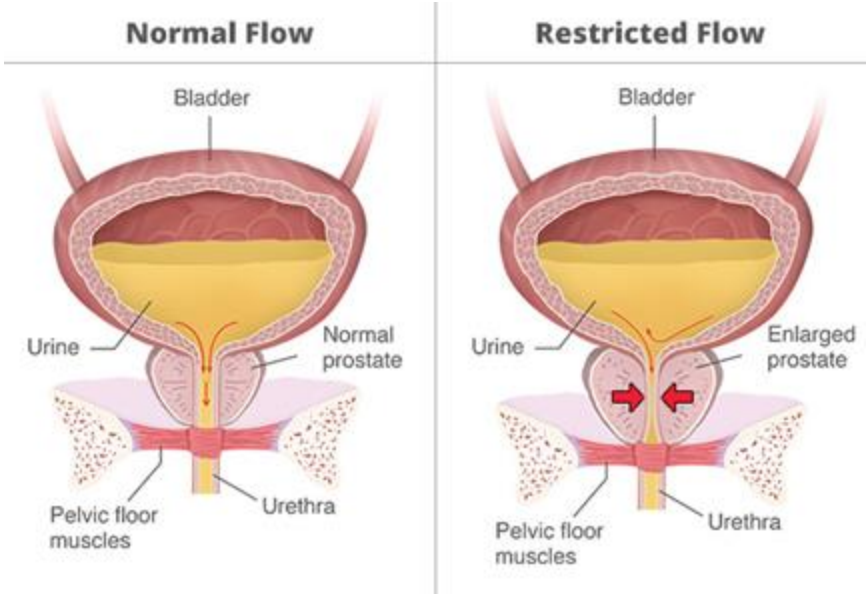
	Pairwise Meta-analysis	Network Meta-analysis		
	Studies (Patients), MD (95% CI)	MD (95% CI)	Absolute Effects*, (95% CI)	Ranking (95% CI)
Doxazosin	3 (1639), −2.83 (−3.60 to −2.07)	−3.67 (−4.33 to −3.02)	−7.06 (−10.41 to −3.71)	1.75 (1.00 to 3.00)
Terazosin	2 (2489), −3.76 (−4.30 to −3.22)	−3.37 (−4.24 to −2.50)	−6.76 (−10.16 to −3.35)	2.42 (1.00 to 5.00)
Sildenafil	1 (336), −4.40 (−6.93 to −1.87)	−3.15 (−5.29 to −1.01)	−6.55 (−10.43 to −2.61)	3.70 (1.00 to 12.00)
Silodosin	2 (1479), −2.60 (−3.18 to −2.01)	−2.44 (−3.24 to −1.64)	−5.83 (−9.19 to −2.42)	5.03 (3.00 to 9.00)
Tamsulosin	9 (4161), −2.09 (−2.60 to −1.59)	−2.13 (−2.56 to −1.71)	−5.52 (−8.85 to −2.19)	6.50 (4.00 to 9.00)
Vardenafil	1 (214), −2.20 (−3.94 to −0.46)	−2.18 (−4.61 to 0.25)	−5.57 (−9.67 to −1.46)	6.81 (1.00 to 14.00)
Alfuzosin	5 (2627), −1.71 (−2.14 to −1.29)	−2.07 (−2.66 to −1.49)	−5.46 (−8.79 to −2.10)	6.92 (4.00 to 10.00)
Naftopidil	NA	−2.03 (−3.02 to −1.04)	−5.42 (−8.84 to −1.97)	7.27 (3.00 to 12.00)
Tadalafil	9 (6436), −2.09 (−2.40 to −1.78)	−1.87 (−2.44 to −1.29)	−5.26 (−8.61 to −1.91)	8.15 (4.00 to 11.00)
Dutasteride	4 (14,266), −1.93 (−2.17 to −1.68)	−1.82 (−2.51 to −1.12)	−5.21 (−8.58 to −1.80)	8.37 (4.00 to 12.00)
Finasteride	10 (10,672), −1.09 (−1.44 to −0.74)	−1.35 (−1.87 to −0.83)	−4.74 (−8.06 to −1.39)	10.75 (8.00 to 13.00)
Tolterodine	1 (419), −0.60 (−1.56 to 0.36)	−0.86 (−2.20 to 0.48)	−4.25 (−7.79 to −0.65)	11.61 (6.00 to 14.00)
Solifenacin	1 (215), −0.30 (−1.72 to 1.12)	−0.30 (−2.50 to 1.92)	−3.69 (−7.65 to 0.30)	12.27 (5.00 to 14.00)
Placebo	Reference	Reference	−3.39 (−6.68 to −0.10)	13.46 (12.00 to 14.00)

The drug therapies in the table were sorted on effectiveness with an order from large to small. CI = confidence interval, IPSS = International Prostate Symptom Score (Range: 0–35 points; 1–7: mild, 8–19: moderate, and 20–35: severe). MD = mean difference, NA = not available.

* Absolute effects indicate the mean changes from baseline to study end.

Urinary Retention

- Initiate an alpha blocker minimum of 3 days before attempting a void trial



Virginia Mason Franciscan Health
A member of CommonSpirit

5-Alpha Reductase Inhibitors [5-ARI's]

- Finasteride
- Type II sites
- Dutasteride
- Type I + II sites
- Longer acting

Virginia Mason Franciscan Health
A member of CommonSpirit

5-ARI's

- Prevent Testosterone from going to DHT
- Shrink the glands in the prostate, which is 50% is glandular
- 15-25% reduction in gland size at 6 months
- 3-6 months to take effect, longer to lose effect
  - [1 year back to baseline]

Virginia Mason Franciscan Health
A member of CommonSpirit

5-ARI's

- PSA decreased by 50 %
- Reduced risk of developing prostate cancer by 25% [not recommended for prevention]
- An increased grade of prostate cancer is thought to be due to selection/detection bias

Virginia Mason Franciscan Health
A member of CommonSpirit

5-ARI's

- Prostate > 30cc's
- PSA > 1.5ng/ml
- Prostate < 30cc no better than placebo
- First 6-12 months ED, decreased libido, EJ problems
- ? Age-related
- Gynecomastia 1.9 vs 1.0
- no clear asso. with dementia, depression, DM

Virginia Mason Franciscan Health
A member of CommonSpirit

PDE-5

- Cialis [Tadalafil] 5mg FDA approved
- Similar to an Alpha blocker
- No change in flow rate
- 4-9 pt drop on IPSS score
- HA 15%
- Dyspepsia 10%
- Flushing 10%

PDE-5

70% of men with BPH have ED

Virginia Mason Franciscan Health
A member of CommonSpirit

Combination Medical Therapy

- Alpha blocker and PDE-5 (hypotension)
- Alpha blockers and ARI's particularly for glands > 70gms
- Sometimes can stop the alpha blocker after initiating ARI's

OAB

- Address the outflow obstruction first
- Anticholinergics [dementia > 3yrs, 54% increased risk]
- Beta-3 agonists
- Combined with an alpha blocker
- Need to check PVR

Virginia Mason Franciscan Health
A member of CommonSpirit

Medical Therapy

- 70% of pts respond favorably
- 30% no response

Virginia Mason Franciscan Health
A member of CommonSpirit

Medical Treatment Follow-up

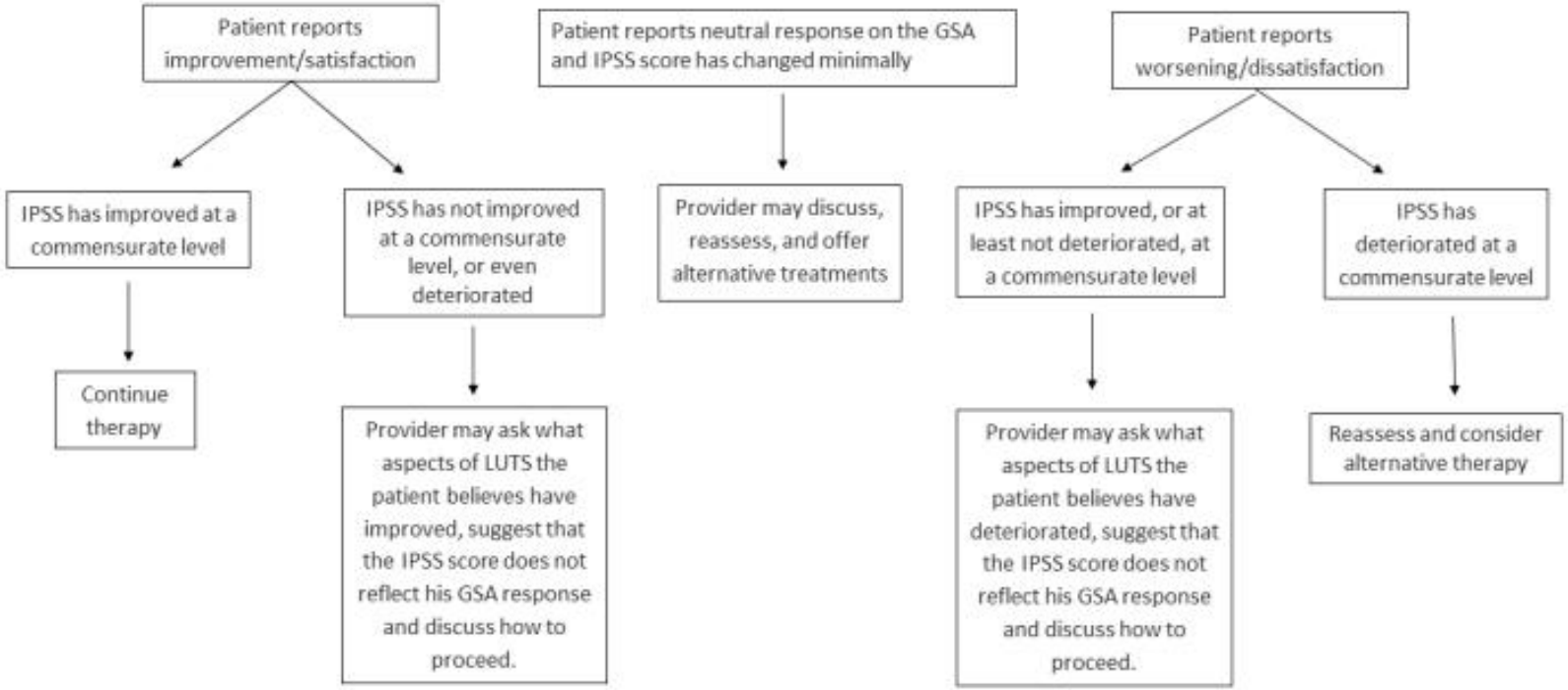
- Drug dependent
- Alpha blockers 2-4 weeks
- 5-ARI's 3-6 months
  - Benefit?
  - Side effects?
  - IPSS score changes
  - PVR changes

Virginia Mason Franciscan Health
A member of CommonSpirit

Follow Up

American Urological Association

Benign Prostatic Hyperplasia (BPH)



Surgical Treatment

- Moderate to severe symptoms unresponsive to medical therapy
- Retention, recurrent infections, renal insufficiency, bladder stones
- Side effects
- Patient preference

SIZE DOES MATTER!

Virginia Mason Franciscan Health
A member of CommonSpirit

Surgical Treatment

- TURP
- TUIP
- Rezume
- Urolift
- Greenlight laser
- Aquablation
- HOLEP
- Optilume
- Simple prostatectomy
- Arterial Embolization

Virginia Mason Franciscan Health
A member of CommonSpirit

Surgical Treatment

SIZE DOES MATTER!

Virginia Mason Franciscan Health
A member of CommonSpirit

Surgical treatment Based on Prostate Size

- 30-70gms
- TUIP
- TURP
- Rezume
- Urolift
- Greenlight
- Aquablation
- Optilume

- >70gms
- Aquablation
- HOLEP
- Simple Prostatectomy
- Arterial embolization

Virginia Mason Franciscan Health
A member of CommonSpirit


AQUABLATOR

Key Takeaways

- Many components and descriptions are used for BPH
- The vast majority of aging men are affected
- Evaluation: use assessment tools [IPSS], H&P, UA, optional other tests

Key Takeaways

- Management:
  - Lifestyle change
  - Medications
    - [alpha blockers, 5-ARI's, PDE5

Virginia Mason Franciscan Health
A member of CommonSpirit

Key Takeaways

- Prostate size should influence the medical treatment used
- **[<30gm no 5-ARI, >70gm consider 5-ARI]**

- Patient age influences treatment
- **[alfuzosin for EJ, silodosin for hypotension]**

Virginia Mason Franciscan Health
A member of CommonSpirit

Key Takeaways

- Treat OAB if present
- PDE-5 if ED present
- Changes in PSA with 5-ARI's
- Patient requires follow-up after starting therapy
  - *[timing dependent on drug used]*

Virginia Mason Franciscan Health
A member of CommonSpirit

Conclusion

When in doubt
Consult your local Urologist

Virginia Mason Franciscan Health
A member of CommonSpirit

Thank you

Virginia Mason Franciscan Health
A member of CommonSpirit