Lower Urinary Tract Symptoms
BPH vs OAB
FLOW vs VOLUME

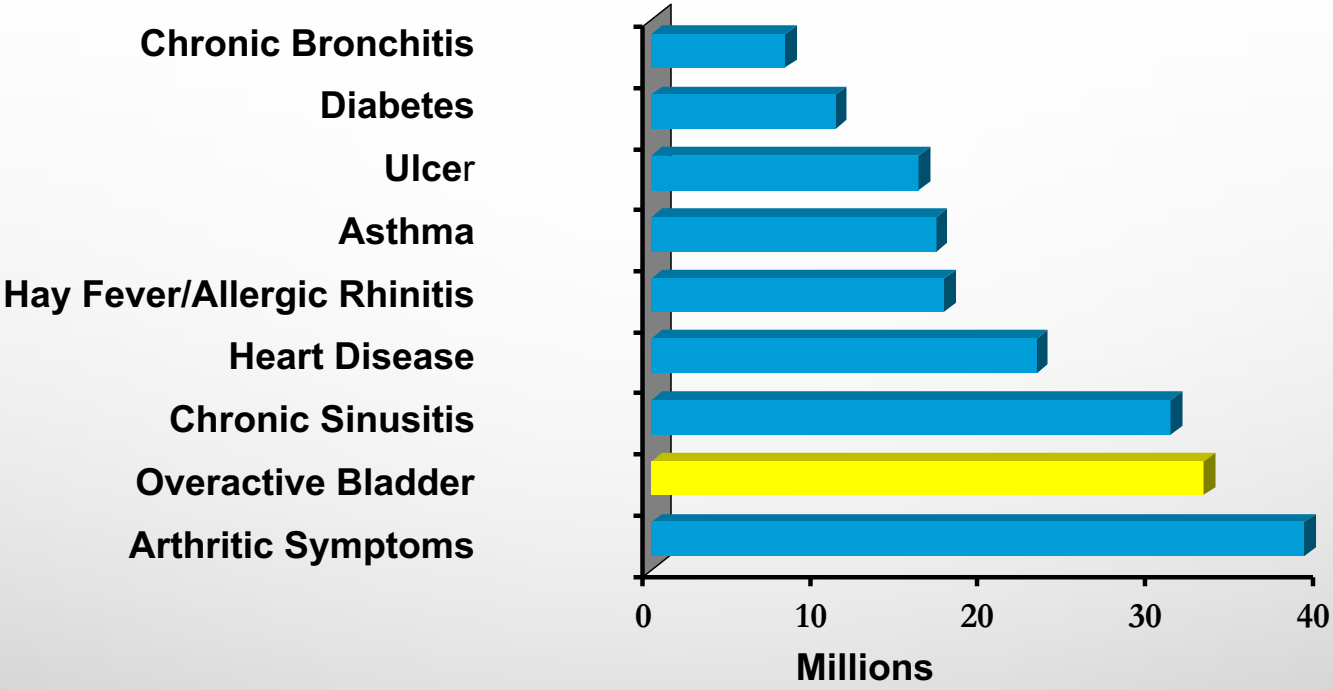
Matt T. Rosenberg, MD
Family Practice – Mid Michigan Health Centers
Jackson, Michigan

Definition of OAB

- Syndrome or symptom complex defined as “urgency, with or without urgency incontinence, usually with frequency and nocturia”
- Urgency is the key symptom of OAB
  - Defined as “sudden compelling desire to void, which is difficult to defer.”

Abrams P, et al. *Urology.* 2003;61:37-49. Rosenberg MT, et al. *Int J Clin Pract.* 2007;61:1535-1546.

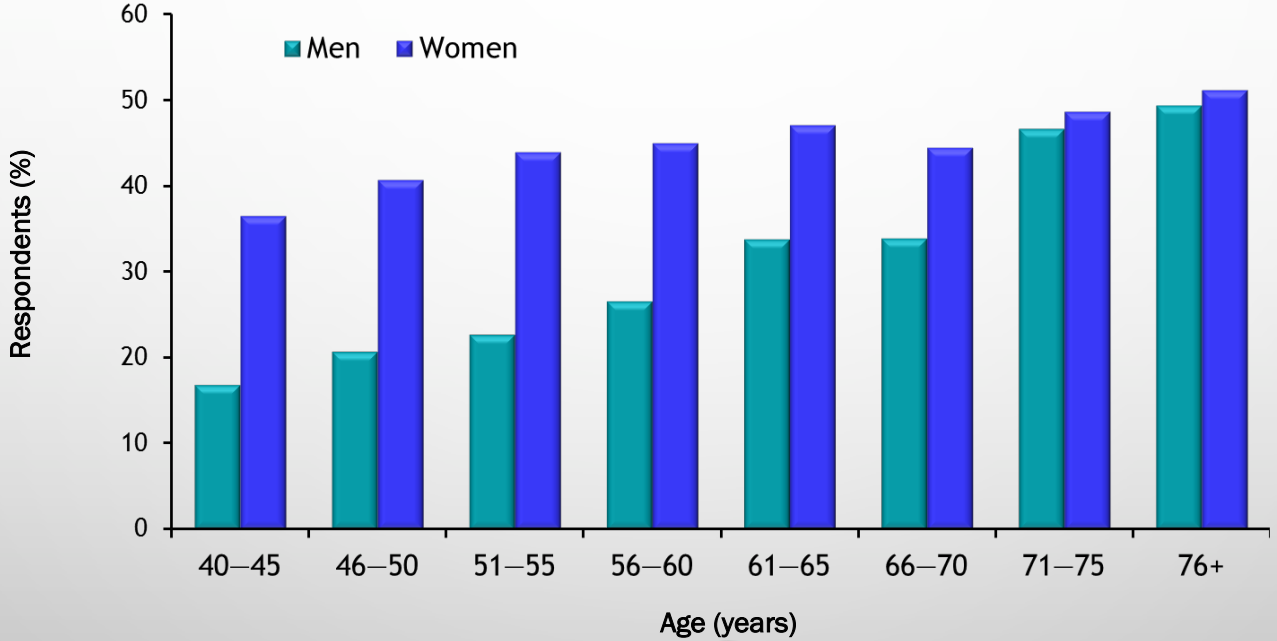
OAB & Other Disorders



Stewart WF, et al. *World J Urol*. 2003;20(6):327-336. Pleis JR, Coles R. Summary health statistics for U.S. adults: National Health Interview Survey, 1998. V*ital Health Stat 10*. 2002;209:1-113. Centers for Disease Control and Prevention/National Center for Health Statistics. Vital and Health Statistics. Hyattsville, MD: U.S. Department of Health and Human Services; 1997. DHHS Publication No. (PHS) 97-1522. «http://www.cdc.gov/nchs/data/series/sr_10/sr10_194.pdf».

Prevalence of OAB Symptoms

1 in 3 US adults ≥40 years of age reported symptoms of OAB at least “sometimes”



Coyne S, et al. *Urology*. 2011;77:1081-1087.

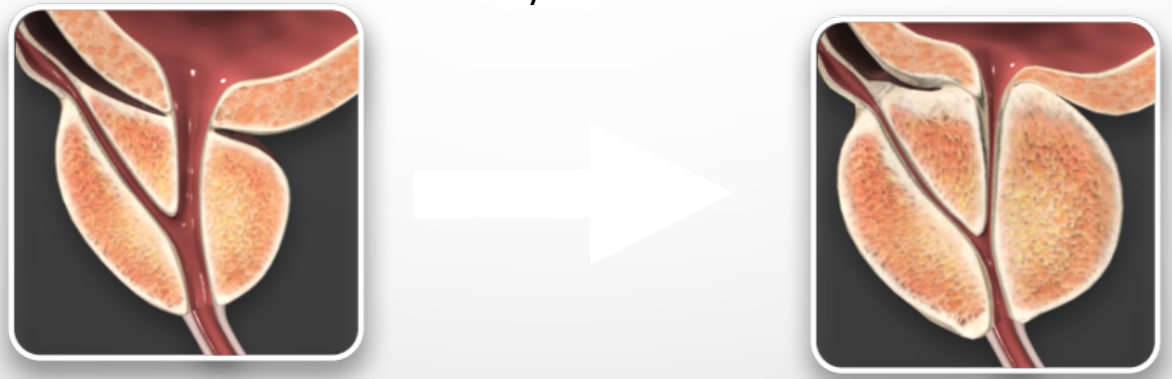
Benign Prostatic Hyperplasia

- A common condition as men age
  - By sixth decade: > 50% of men have some degree of hyperplasia
  - By eighth decade: > 90% of males will have hyperplasia
- In only a minority of patients (about 10%) with this hyperplasia be symptomatic and severe enough to require medical treatment or surgical intervention

McVary KT, et al. *J Urol*. 2011;185(5):1793-1803..

Natural History of Prostate Growth

Based on data from a study by Roehrborn and colleagues, a 55-year–old man who has a 30 mL prostate volume, is experiencing symptoms, and has a PSA of 1.5 ng/mL can expect his prostate to approximately double in size over the next 15 years.



Age	55 yrs	60 yrs	65 yrs	70 yrs
PV	**30 mL**	**>40 mL**	**>50 mL**	**>61 mL**
PSA	1.5 ng/mL			

Roehrborn C, et al. *J Urol.* 2000;163:13–20.

Risk Evaluation of BPH-LUTS Progression

Baseline Factors as Predictors

Five risk factors

1. Total prostate volume ≥31 mL
2. PSA ≥1.6 ng/mL
3. Age ≥62

Not usually evaluated by the PCP

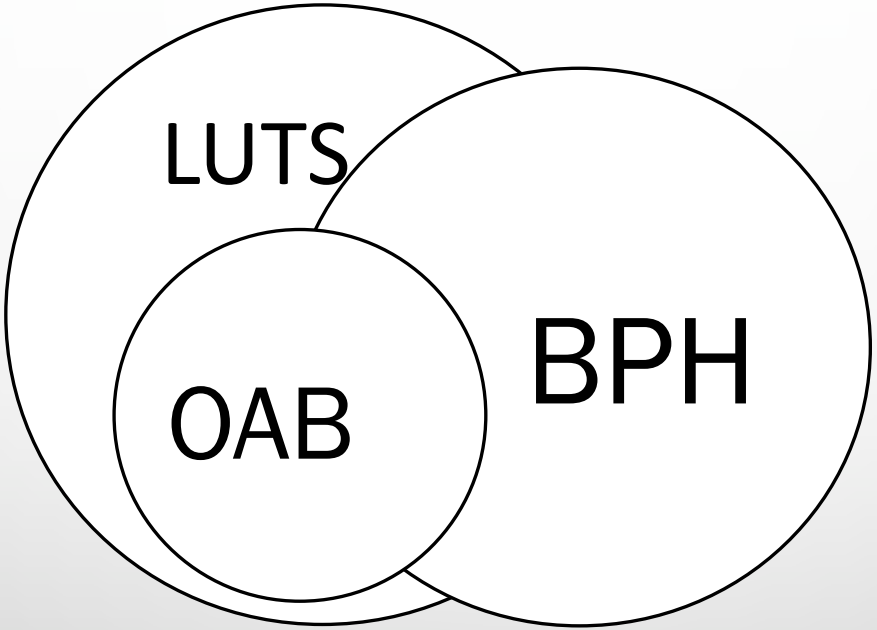
4. Q_{max} <10.6 mL/s
5. PVR ≥39 mL

PVR, post-void residual; Q_{max}, maximum flow rate.

Crawford ED, et al. *Urology*. 2006;175(4):1422-1427. Rosenberg MT, et al. *Int J Clin Pract*. 2010; 64(4):488-496.

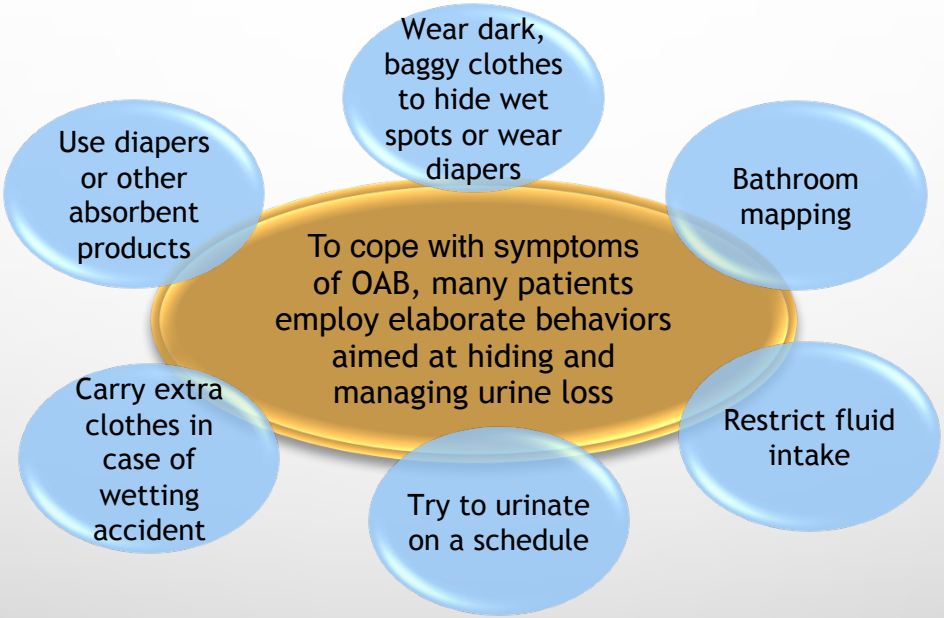
Rosenberg MT, et al. *Current Urology Reports*. 2013 Dec;14(6).

OAB and BPH Can Coexist



Rosenberg MT, et al. *Int J Clin Pract*. 2007;61,9,1535-1546Lee JY et al. *BJU Int.* 2004;94:817. Dmochowski et al. *Urology*. 2002;60(suppl 5A):56-62. Thomas AW et al. *J Urol*. 1999;161:257.

Coping Strategies



Rosenberg MT. *Curr Urol Rep.* 2008. Abrams et al. *Am J Manag Care.* 2000 Jul;6(11 Suppl):S580-S590. Ricci JA, et al. *Clin Ther.* 2001;23:1245-1259.

Understanding LUTS means understanding the normal functions of the BLADDER and the PROSTATE

Function of the Bladder

- Normal Function
  - Storage capacity (300 – 500 ml of fluid)
    - Adequate low pressure urinary storage (bladder)
    - Adequate outlet resistance (sphincter)
  - Empty to completion (minimal residual)
    - Adequate bladder contraction
    - Absence of outlet obstruction

Wein AJ. Pathophysiology and categorization of voiding dysfunction. In: Wein AJ, Kavoussi LR, Novick AC, et al, eds. *Campbell-Walsh Urology*. 9th ed. Philadelphia, PA: W. B. Saunders/Elsevier; 2007:1973-1985.

Function of the Bladder

- Abnormal Function (failure to store or empty)
  - Voiding frequently small amounts
  - Uncontrollable urge (urgency)
  - Incomplete emptying
  - Hesitancy, poor stream

Wein AJ. Pathophysiology and categorization of voiding dysfunction. In: Wein AJ, Kavoussi LR, Novick AC, et al, eds. *Campbell-Walsh Urology*. 9th ed. Philadelphia, PA: W. B. Saunders/Elsevier; 2007:1973-1985.

Function of the Prostate

Normal Function

- Produces fluid for seminal emission
- Does not grow into the urethra thereby allowing unobstructed flow

Abnormal Function

- Obstruction of urinary flow
- Poor function seen as failure to void

Rosenberg MT, et al. *Int J Clin Pract*. 2007;61(9):1535-1546.

Symptoms when LUTS relates to the Bladder (storage) or Prostate (voiding)

Storage (bladder)	Voiding (prostate)
Urgency	Hesitancy
Frequency	Poor flow/weak stream
Nocturia	Intermittency
Urge incontinence	Straining to void
Stress incontinence	Terminal dribble
Mixed incontinence	Prolonged urination
Overflow incontinence	Urinary retention

Abrams P. et al. Neurourol Urodyn. 2002;21:167-178. Chapple CR, et al. Eur Urol. 2006;49:651-658.

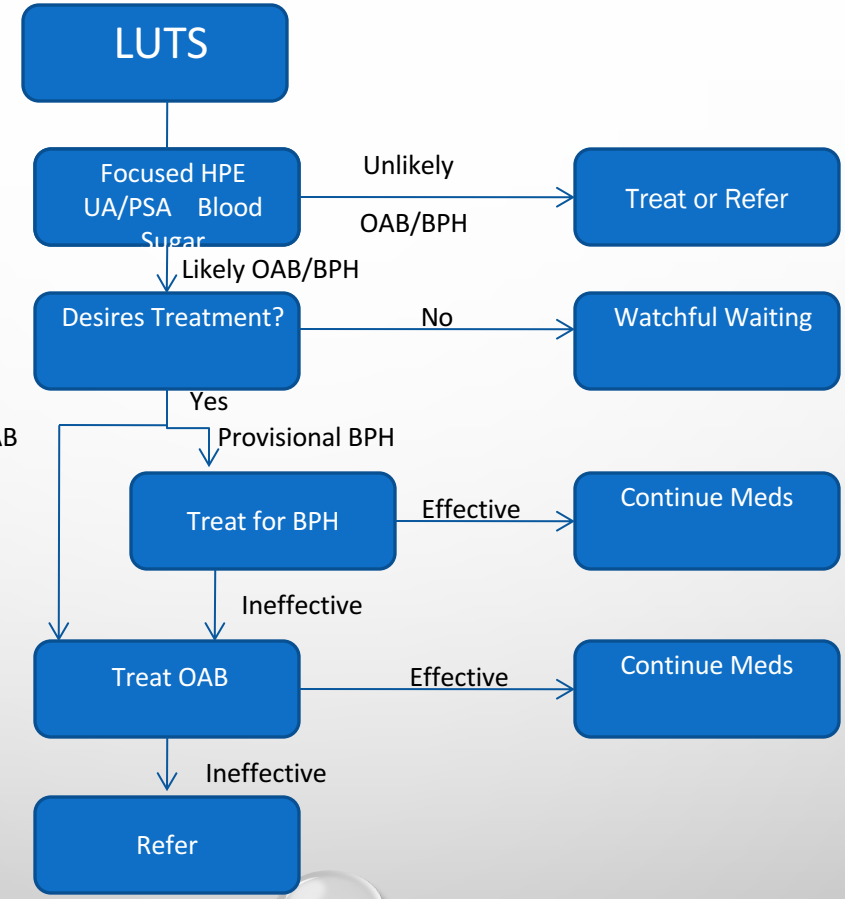
Differentiating the Etiology of LUTS

- Weak flow – think prostate
- Voiding small amounts – think bladder
- Leakage of urine – think bladder or sphincter
- Good flow, normal volume – think too much fluid production and evaluate accordingly

It is all about *volume* and *flow*

Rosenberg MT, et al. *Int J Clin Pract.* 2007;61(9):1535-1546.

The LUTS Algorithm



Key:
LUTS – lower urinary tract symptoms
HPE – history, physical examination
UA – urinalysis
PSA – prostate specific antigen
BPH – benign prostatic hyperplasia
OAB – overactive bladder

Modified from Rosenberg MT, Staskin DR, Kaplan SA, et al. *Int J Clin Pract*. 2007;61(9):1535-1546.

Defining LUTS

Frequency	▪ Patient considers that he/she voids too often by day ▪ Normal is < 8 times per 24 hours
Nocturia	▪ Waking to urinate during sleep hours ▪ Considered a clinical problem if frequency is greater than twice a night
Urgency	▪ *Sudden* compelling desire to pass urine that is difficult to defer
Urge Urinary Incontinence (UUI)	▪ Involuntary leakage accompanied by, or immediately preceded by, urgency
OAB "Wet"	▪ OAB *with* UUI
OAB "Dry"	▪ OAB *without* UUI
Warning Time	▪ Time from first sensation of urgency to voiding

Abrams P, et al. *Neurourol Urodyn*. 2002;21:167-78; Wein A, et al. *J Urol.* 2006;175:S5-10;Zinner N, et al. *Int J Clin Pract*. 2006;60:119-26; Wein AJ. *Am J Manag Care.* 2000;6:S559-64.

Simple Questions the PCP Can Ask

- Do you have a sudden urge to void and can barely make it to the bathroom?
- Do you wear a pad or diaper?
- Can you sit through a movie without going to the bathroom?
- Do you leak urine?
- Do you get up at night?

International Prostate Symptom Score (IPSS) Questionnaire

International Prostate Symptom Score (I-PSS) Questionnaire

	Not at all	Less than 1 time in 5	Less than half the time	About half the time	More than half the time	Almost always	Score
1. Incomplete emptying Over the past month, how often have you had a sensation of not emptying your bladder completely after you finished urinating?	0	1	2	3	4	5	
2. Frequency Over the past month, how often have you had to urinate again less than two hours after you finished urinating?	0	1	2	3	4	5	
3. Intermittency Over the past month, how often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5	
	None	1 time	2 times	3 times	4 times	5 times or more	
7. Nocturia Over the past month, how many times did you most typically get up to urinate from the time you went to bed at night until the time you got up in the morning?	0	1	2	3	4	5	

Total I-PSS Score ____

mild BPH (1 to 7), moderate BPH (8 to 19), or severe BPH (20 to 35).

	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly Dissatisfied	Unhappy	Terrible
1. Quality of Life Due to Urinary Symptoms 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

McVary KT, et al. *J Urol*. 2011;185(5):1793-1803. Available at http://www.urospec.com/uro/Forms/ipss.pdf

The Evaluation of LUTS: History, Physical and Labs are Essential

- Medical and surgical history
- Medications
- Focused physical examination
- Voiding diary
- Labs
- Urodynamics, cystoscopy, and diagnostic renal and bladder ultrasound not necessary in initial workup of uncomplicated patients

Hashim H, et al. *Drugs*. 2004;64:1643-1656. Lavelle JP, et al. *Am J Med* 2006;119(suppl 1):37-40. Rosenberg MT, et al. *Cleve Clin J Med*. 2005;72:148-156. Rosenberg MT, Staskin DR, Kaplan SA, et al. *Int J Clin Pract*. 2007;61(9):1535-1546. Gormley EA, et al. American Urological Association (AUA) Guideline. AUA Web site. 2012. http://www.auanet.org/content/media/OAB_guideline.pdf.

Examples in the Patient's History That May Cause or Worsen LUTS

- Diabetes (new onset or poorly controlled)
  - Causing polyuria/polydipsia
- Congestive heart failure
  - Nighttime fluid mobilization
- Recent Surgery
  - Catheterization during surgery, immobilization, constipation from pain medications

A recent onset of the symptoms may provide a clue to the etiology

Medications as a Cause of LUTS

Sedatives	Confusion, secondary incontinences
Alcohol, Caffeine, Diuretics	Diuresis
Anticholinergics	Impair contractility, voiding difficulty, overflow inc.
α – Agonists	Increased outlet resistance, voiding difficulty
ß - Blockers	Decreased urethral closure, stress incontinence
Calcium-Channel Blockers	Reduce bladder smooth muscle contractility
Angiotensin Converting Enzyme	Induce cough, stress urinary incontinence
First generation antihistamines	Increase outlet resistance
Cholinesterase inhibitors	Precipitate urge incontinence
Opioids	Constipation

Lavelle JP, et al. *Am J Med*. 2006;119(suppl 1):37-40. DeBeau CE. *J Urol*. 2006;175(3 py 2):S11-S15. Gill SS, et al. *Arch Intern Med*. 2005;165:808-813. Wyman JF, et al. *Int I Clin Pract*. 2009;63:1177-1191. Newman DK. *Nurse Pract*. 2009;34:33-45.

The Focused Physical Examination

- Abdominal
  - Tenderness, masses, distension
- Neurological
  - Mental and ambulatory status, neuromuscular function
- Genitourinary
  - Meatus and testis
- Rectal
  - Tone
  - Prostate size, shape, nodules and consistency

Rosenberg MT ,Staskin DR, Kaplan SA, et al. *Int J Clin Pract*. 2007;61(9):1535-1546.
Rosenberg MT, Newman DK, Tallman CT, et al. *Cleve Clin J Med*. 2007;74(suppl 3):S21-S29.
Rosenberg MT, Miner MM, Riley PA, Staskin DR. *Int J Clin Pract*. 2010; 64(4):488-496.

Laboratory Tests

- Urinalysis
  - Infection, blood
  - Urine not an adequate screener for diabetes
- A random or fasting blood sugar
  - Diabetes
- Prostate specific antigen
  - Prostate specific not cancer specific
  - Excellent as a surrogate marker for prostate size
    - PSA is more accurate than a DRE when estimating prostate size.
    - A PSA of 1.5 ng/ml equates to a prostate volume of at least 30 grams(ml)

Rosenberg MT, Staskin DR, Kaplan SA, et al. *Int J Clin Pract*. 2007;61,9,1535-1546. Bosch J, et al. *Eur Urol*. 2004;46:753-759 Roerborn CG, et al. *Urology*. 1999;53;381-9. American Urological Association (AUA) Guideline. AUA Web site. 2012. http://www.auanet.org/content/media/OAB_guideline.pdf. Accessed March 21, 2014.

The Purpose of the Voiding Diary

- Identifies voiding frequency and voided volume
- Differentiates behavioral vs LUTS pathology
  - Voiding frequently
    - after drinking the 40 ounce beverage (behavioral)
    - small amounts as a result of always being in a rush (behavioral)
    - small amounts (OAB)
    - large amounts (intake / output)
- Alerts the patients to habits /opportunities to modify
- Can monitor effect of treatment

Wyman JF, et al. *Int J Clin Pract*. 2009; 63(8):1177-91

The Post Void Residual (PVR) is Only Needed in Select Patients

- The fear of patients going into retention when treated for OAB leaves many patients untreated
- If PVR residual is less than 50 ml, causing retention when treating OAB is extremely unlikely
  - FACT: Most PCPs will not have bladder scanner and will not want to catheterize a patient
  - FACT: Most PCPs will have access to a ultrasound unit and can order a post void residual

USE COMMON SENSE

If you are treating the patient for voiding too frequently (OAB) and they have not voided in 6–8 hours or have a sense to void but cannot, have them contact you

Rosenberg MT. *Curr Opin Urol.* 2008;9(6):428-32. Rosenberg MT, Staskin DR, Kaplan SA, et al. *Int J Clin Pract*. 2007;61(9):1535-1546.

Indications for Referral

- History of recurrent urinary tract infections or other infection
- Pelvic irradiation
- Microscopic or gross hematuria
- Prior genitourinary surgery
- Elevated prostate-specific antigen
- Abnormal genital exam
- Suspicion of neurological cause of symptoms
- Meatal stenosis
- History of genitourinary trauma
- Pelvic pain
- Uncertain diagnosis or patient choice

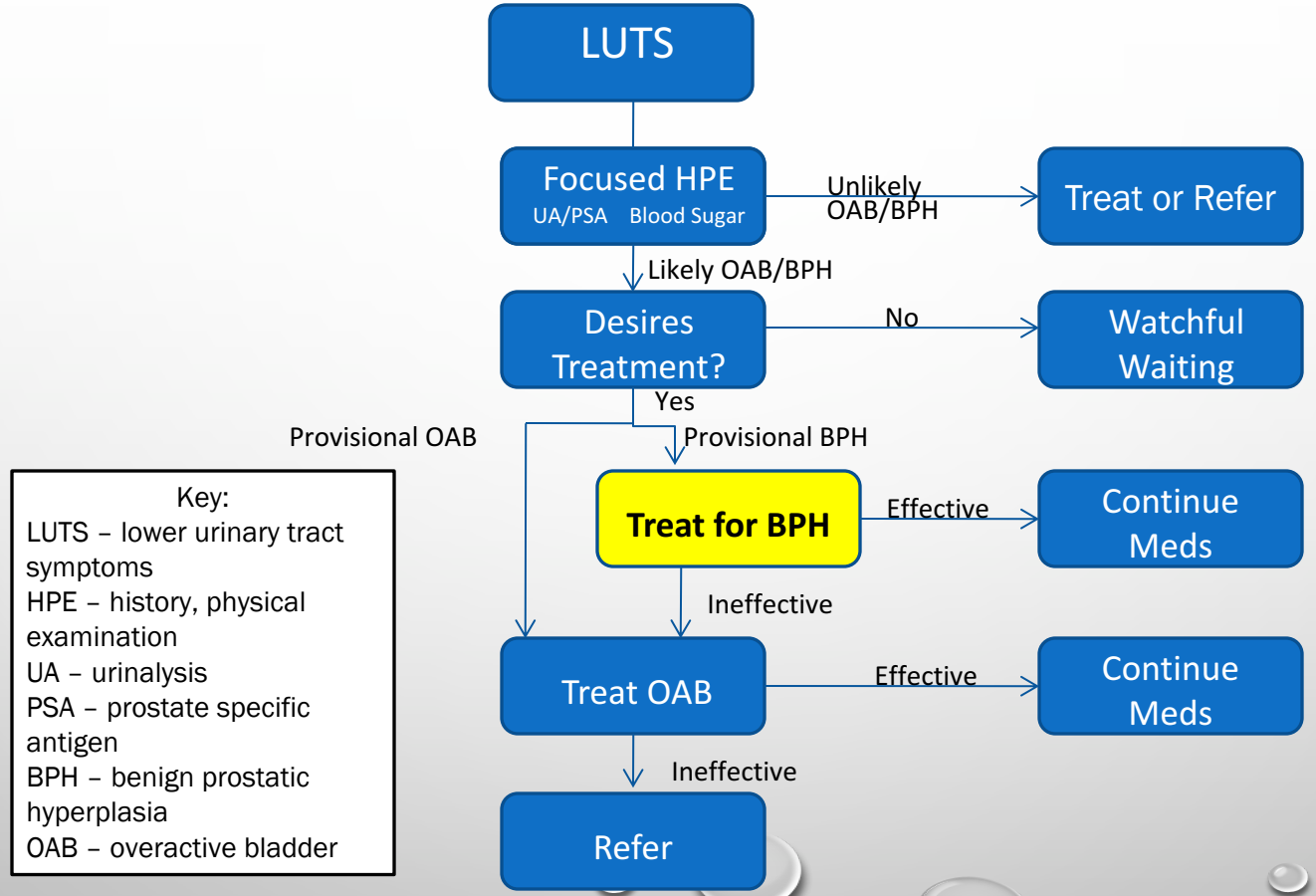
Rosenberg MT, Staskin DR, Kaplan SA, et al. *Int J Clin Pract*. 2007;61,9,1535-1546

Treatment Now Can Be Empiric

- No identifiable etiology
- No reversible causes
- Is patient bothered enough for treatment?
  - No, watchful waiting
  - Yes, consider algorithm
    - Weak flow – think Prostate
    - Poor voiding volumes – think Bladder
    - Incontinence – think Bladder/Outlet

Rosenberg MT. *Cur Uro* 2008, 9:428–432.

The Male (or Prostate) Dilemma



Modified from Rosenberg MT, Staskin DR, Kaplan SA, et al. *Int J Clin Pract*. 2007;61(9):1535-1546.

Take Home Message

- BPH/OAB doesn’t take your life — it steals it from you
- The untreated 85% is in the PCP office
- LUTS can be diagnosed efficiently by the PCP by differentiating flow versus volume