Lower Urinary Tract Symptoms
BPH vs OAB
FLOW vs VOLUME

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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.”

OAB & Other Disorders

- Chronic Bronchitis
- Diabetes
- Ulcer
- Asthma
- Hay Fever/Allergic Rhinitis
- Heart Disease
- Chronic Sinusitis
- Overactive Bladder
- Arthritic Symptoms

Prevalence of OAB Symptoms

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

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.

<table>
<thead>
<tr>
<th>Age</th>
<th>PV</th>
<th>PSA</th>
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</thead>
<tbody>
<tr>
<td>55 yrs</td>
<td>30 mL</td>
<td>1.5 ng/mL</td>
</tr>
<tr>
<td>60 yrs</td>
<td>&gt;40 mL</td>
<td>&gt;50 mL</td>
</tr>
<tr>
<td>65 yrs</td>
<td>&gt;50 mL</td>
<td>&gt;61 mL</td>
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<tr>
<td>70 yrs</td>
<td>&gt;61 mL</td>
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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. $Q_{\text{max}} < 10.6$ mL/s
5. PVR ≥39 mL

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

OAB and BPH Can Coexist

Rosenberg MT, et al. *Int J Clin Pract.* 2007;61,9,1535-1546
Coping Strategies

To cope with symptoms of OAB, many patients employ elaborate behaviors aimed at hiding and managing urine loss:

- Use diapers or other absorbent products
- Wear dark, baggy clothes to hide wet spots or wear diapers
- Carry extra clothes in case of wetting accident
- Try to urinate on a schedule
- Bathroom mapping
- Restrict fluid intake
- Use diapers or other absorbent products

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

Function of the Bladder

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

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

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

<table>
<thead>
<tr>
<th>Storage (bladder)</th>
<th>Voiding (prostate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgency</td>
<td>Hesitancy</td>
</tr>
<tr>
<td>Frequency</td>
<td>Poor flow/weak stream</td>
</tr>
<tr>
<td>Nocturia</td>
<td>Intermittency</td>
</tr>
<tr>
<td>Urge incontinence</td>
<td>Straining to void</td>
</tr>
<tr>
<td>Stress incontinence</td>
<td>Terminal dribble</td>
</tr>
<tr>
<td>Mixed incontinence</td>
<td>Prolonged urination</td>
</tr>
<tr>
<td>Overflow incontinence</td>
<td>Urinary retention</td>
</tr>
</tbody>
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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
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

## 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 |

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 (IPSS) Questionnaire

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

- Mild BPH (1 to 7)
- Moderate BPH (8 to 19)
- Severe BPH (20 to 35)
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

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
<table>
<thead>
<tr>
<th>Medications</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedatives</td>
<td>Confusion, secondary incontinences</td>
</tr>
<tr>
<td>Alcohol, Caffeine, Diuretics</td>
<td>Diuresis</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>Impair contractility, voiding difficulty, overflow inc.</td>
</tr>
<tr>
<td>α - Agonists</td>
<td>Increased outlet resistance, voiding difficulty</td>
</tr>
<tr>
<td>β - Blockers</td>
<td>Decreased urethral closure, stress incontinence</td>
</tr>
<tr>
<td>Calcium-Channel Blockers</td>
<td>Reduce bladder smooth muscle contractility</td>
</tr>
<tr>
<td>Angiotensin Converting Enzyme</td>
<td>Induce cough, stress urinary incontinence</td>
</tr>
<tr>
<td>First generation antihistamines</td>
<td>Increase outlet resistance</td>
</tr>
<tr>
<td>Cholinesterase inhibitors</td>
<td>Precipitate urge incontinence</td>
</tr>
<tr>
<td>Opioids</td>
<td>Constipation</td>
</tr>
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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

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)

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
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

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

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

The Male (or Prostate) Dilemma

LUTS

Focused HPE
- UA/PSA
- Blood Sugar

Desires Treatment?
- Likely OAB/BPH
- Unlikely OAB/BPH

Treat or Refer

Watchful Waiting

Treat for BPH
- Provisional OAB
- Provisional BPH

Treat OAB
- Effective
- Ineffective

Refer

Continue Meds

Effective

Ineffective

Key:
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- HPE – history, physical examination
- UA – urinalysis
- PSA – prostate specific antigen
- BPH – benign prostatic hyperplasia
- OAB – overactive bladder

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