

# MALE URINARY FUNCTION AND DYSFUNCTION

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OHSU

57<sup>TH</sup> ANNUAL PRIMARY CARE REVIEW



*"I seem to have missed the cup."*

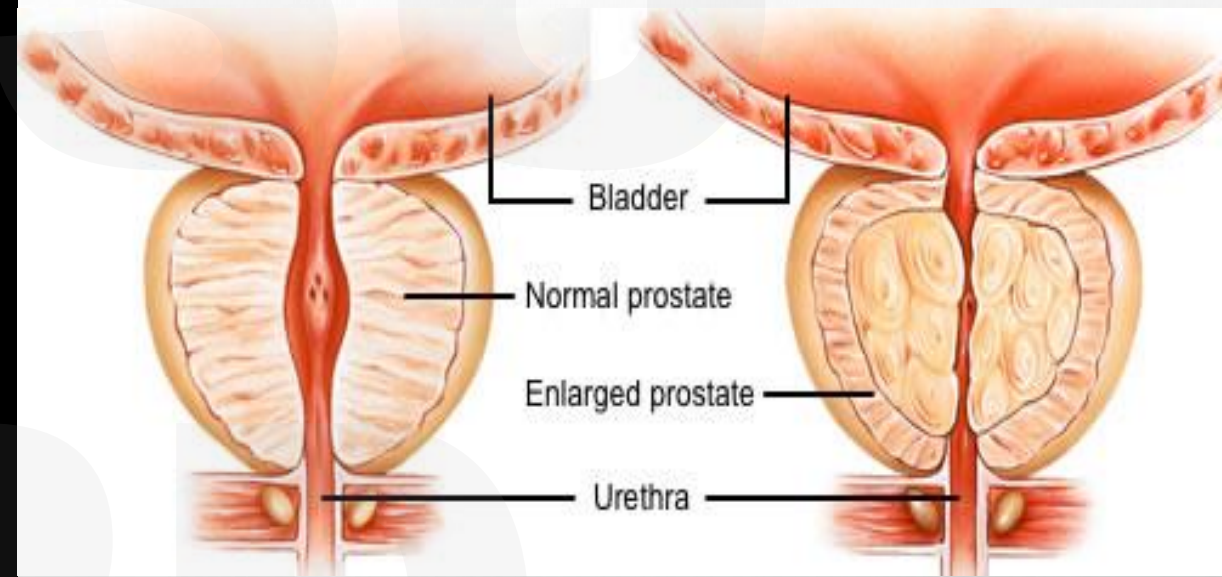
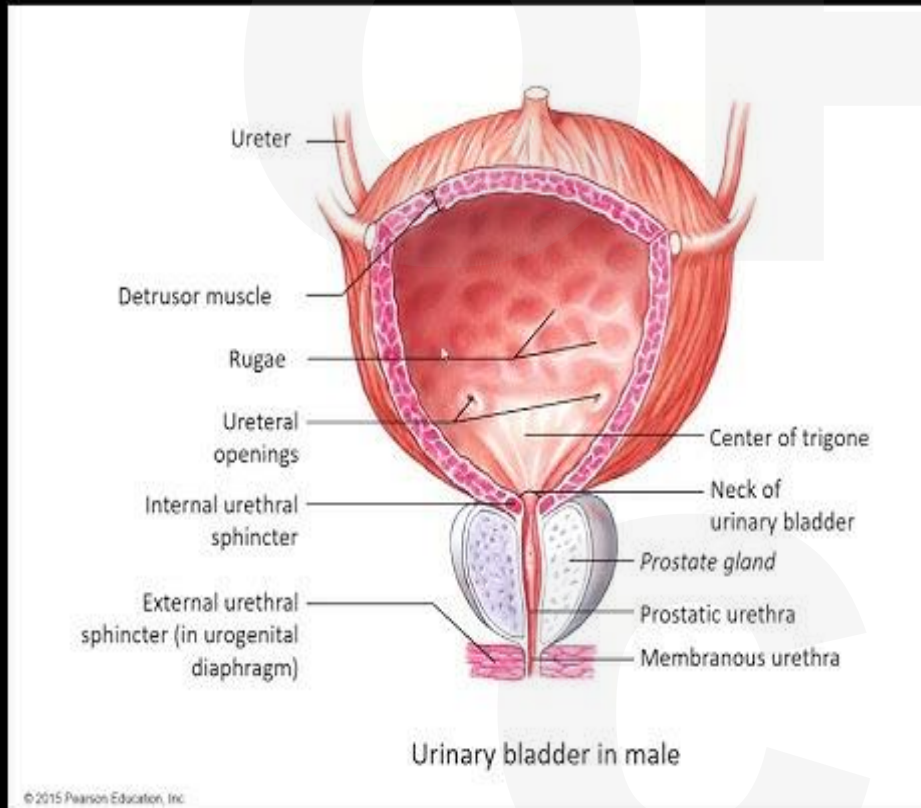
# **DISCLOSURES**

- I AM A MEMBER OF THE MEDICAL EDUCATION  
SPEAKERS NETWORK

# OBJECTIVES

- TO PRESENT A COMPREHENSIVE DISCUSSION OF PROSTATIC PHYSIOLOGY AND PATHOLOGY AND TREATMENT OF BENIGN PROSTATIC ENLARGEMENT AS IT RELATES TO MALE VOIDING DYSFUNCTION
- TO PROVIDE A DETAILED OVERVIEW OF MALE URINARY FUNCTION AND DYSFUNCTION
- TO REVIEW CURRENT PHARMACOTHERAPY FOR MALE URINARY VOIDING DYSFUNCTION

# THE PLUMBING: MALE LOWER URINARY TRACT ANATOMY



# TERMINOLOGY FOR MALE VOIDING DYSFUNCTION

- **LUTS = LOWER URINARY TRACT SYMPTOMS**
  - GENERIC TERM FOR ANY VOIDING SYMPTOMS DERIVED FROM BLADDER, PROSTATIC OR URETHRAL PATHOLOGY
  - INCLUDES BOTH OBSTRUCTIVE (EMPTYING) SYMPTOMS AND IRRITATIVE (STORAGE) SYMPTOMS
  - LUTS IS USED MOST COMMONLY TO REFER TO SYMPTOMS IN OLDER MEN

# SYMPTOMS OF OBSTRUCTION

- SLOW STREAM/DRIBBLING STREAM /TERMINAL DRIBBLING\*)
- TROUBLE INITIATING FLOW (**HESITANCY**)
- URINATING IN FITS AND STARTS (**INTERMITTENCY**)
- FREQUENT DAYTIME URINATION (**FREQUENCY**)
- **NOCTURIA** = GETTING UP >ONCE PER NIGHT
- **URGENCY INCONTINENCE**
- **URINARY RETENTION** = INCOMPLETE EMPTYING OF THE BLADDER; BASED ON POST-VOID RESIDUAL (PVR) BY SCANNER OR CATHETERIZATION: PVR  $\geq$ 100-150 ML AND/OR INABILITY TO URINATE AT ALL
- **OVERFLOW INCONTINENCE** (ASSOCIATED WITH RETENTION); BLADDER CAPACITY IS EXCEEDED



# CLOGGED PIPES: OBSTRUCTION

- **OBSTRUCTION IS COMMON IN MEN**
- **DYSFUNCTION DUE TO PROSTATIC AND/OR URETHRAL PATHOLOGY**
  - BPH
  - EXTERNAL URINARY SPHINCTER DYSFUNCTION
    - DYSSYNERGIA (DESD)
  - STRICTURE = SCAR TISSUE
  - PROSTATE CANCER
  - URETHRAL CANCER
  - STONES/FOREIGN BODIES
- **HAVE TO DISTINGUISH THE MOST LIKELY LOCATION OF THE OBSTRUCTION**
  - BLADDER NECK/PROSTATE – PHYSIOLOGIC/NEUROLOGIC
  - EXTERNAL URINARY SPHINCTER (EUS) – FUNCTIONAL/NEUROLOGIC
    - BEWARE HISTORY OF SPINAL/BACK INJURIES



# OAB: OVERACTIVE BLADDER

- URGENCY\*
- FREQUENCY
- NOCTURIA
- +/- URGE INCONTINENCE
- DRY OAB (MEN)

\*NECESSARY COMPONENT OF OAB

# INCONTINENCE IN MEN

## • URGE INCONTINENCE

- COMMON IN MEN
- INABILITY TO POSTPONE URINATION
- MAY BE A SIGN OF NEUROLOGIC DAMAGE, E.G. STROKE, DIABETES MELLITUS
- USUALLY PRECEDED BY URGE TO URINATE

## • STRESS INCONTINENCE

- LESS COMMON IN MEN
- CAN OCCUR WITH LIFTING, COUGHING, LAUGHING, STRAINING
- CAN ALSO OCCUR WITHOUT ANY STRESS MANEUVER (“DRIPPAGE”)
- URETHRAL PROBLEM

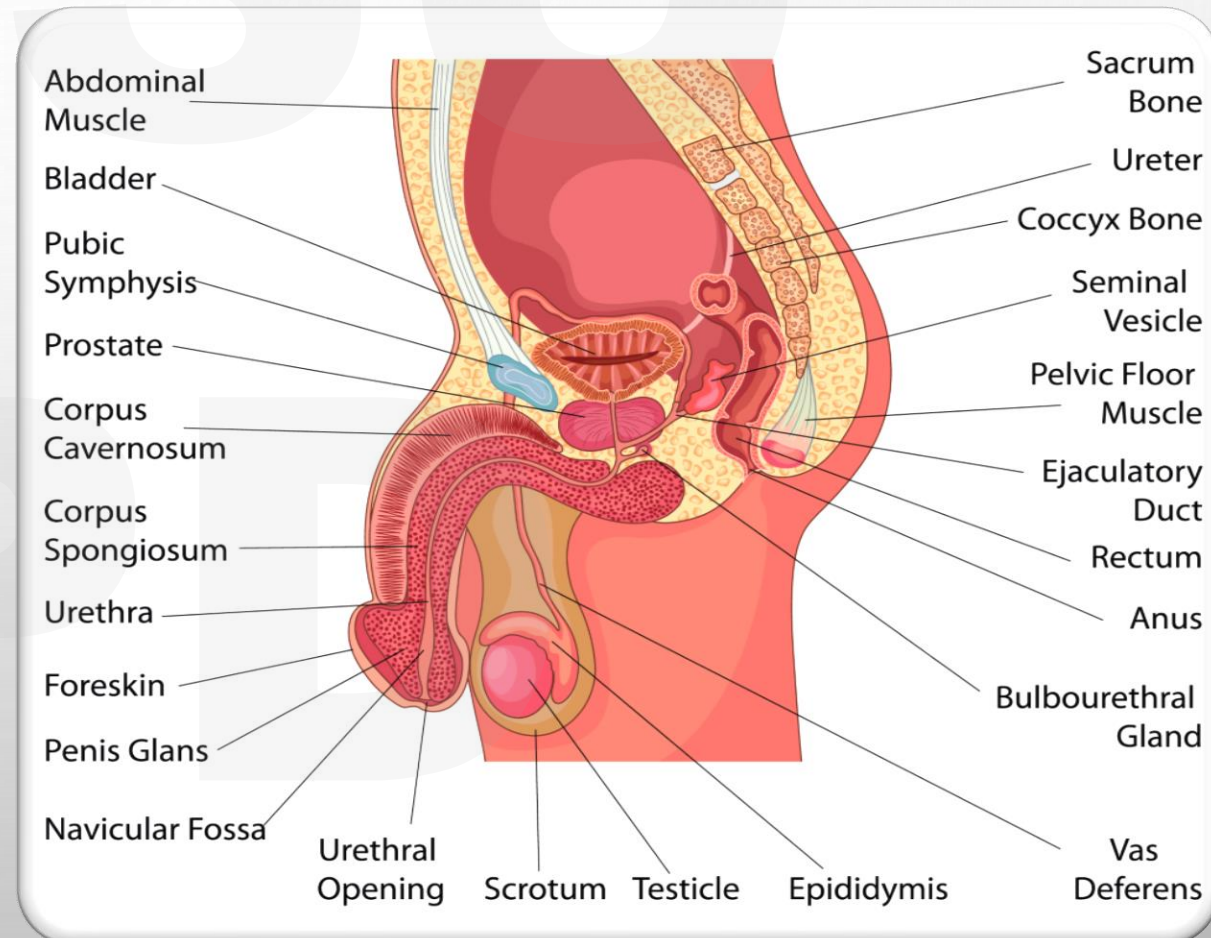
# PROSTATE GLAND - BACKGROUND



*"And one for the old prostate."*

# PROSTATE PHYSIOLOGY

- NORMAL VOLUME 20-25 CC (WALNUT SIZE)
- INCREASES IN SIZE WITH AGE > 40
- FUNCTION = REPRODUCTIVE GLAND: CONTRIBUTES TO SEMINAL PLASMA
- ROUGH CORRELATION BETWEEN SIZE AND PSA (PROSTATE SPECIFIC ANTIGEN)
- **NO** CORRELATION BETWEEN PROSTATE SIZE AND
  - DEGREE OF OBSTRUCTION
  - SEVERITY OF SYMPTOMS



# BPE (BENIGN PROSTATIC ENLARGEMENT)

- Prostatic growth regulated by testosterone
- 5-alpha reductase converts testosterone to **dihydrotestosterone**
  - glandular and stromal proliferation
- 50% in men age 50-60 to 90% in men age 80-90
- 50% of men complain of lower urinary tract symptoms (LUTS)
- 20% of men require treatment
- **ANATOMIC CHANGES ASSOCIATED WITH BPE**
- Static vs. Dynamic components
  - acinar / epithelial elements = static or “bulky” component
    - epithelial cells are sensitive to androgens
  - prostatic smooth muscle = dynamic component (stroma)
    - muscle tension mediated by **alpha<sub>1</sub> adrenergic** receptors
  - nl S/E ratio 2:1; S/E = 5:1 in BPH

# BPH: BASIC EVALUATION

- HISTORY WITH EMPHASIS ON FAMILIAL PROSTATE DISEASE, DM, UTI, PRIOR GU PROCEDURES, SYMPTOMS
- PE WITH DIGITAL RECTAL EXAM (DRE)
- URINALYSIS
- UROFLOW EXAMINATION



# **BPH/BOO SYMPTOMS (LUTS)**

- DIMINISHED FORCE OF STREAM
- HESITANCY
- INTERMITTENCY
- SENSATION OF INCOMPLETE EMPTYING
- NOCTURIA
- FREQUENCY
- URGENCY
- URGENCY INCONTINENCE
- OVERFLOW INCONTINENCE

# IMPORTANCE OF URINALYSIS

- ESSENTIAL TO THE EVALUATION OF GENITOURINARY PATHOLOGY
  - PRESENCE OF MICROHEMATURIA, PYURIA OR BACTERIURIA
  - UTI SHOULD BE RULED OUT AS THE CAUSE FOR STORAGE SYMPTOMS OR INCONTINENCE ESPECIALLY IN THE GERIATRIC POPULATION
  - DIAGNOSIS OF OCCULT DISEASE SUCH AS DIABETES

# AMERICAN UROLOGICAL ASSOCIATION SYMPTOM INDEX (AUA-SI)

AUA BPH Symptom Score						
	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
1. 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. 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. 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. Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5
5. Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5
6. 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 or more times
7. 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 Symptom Score						

AUA Symptom Score

max 35 points

0-7 = mild symptoms

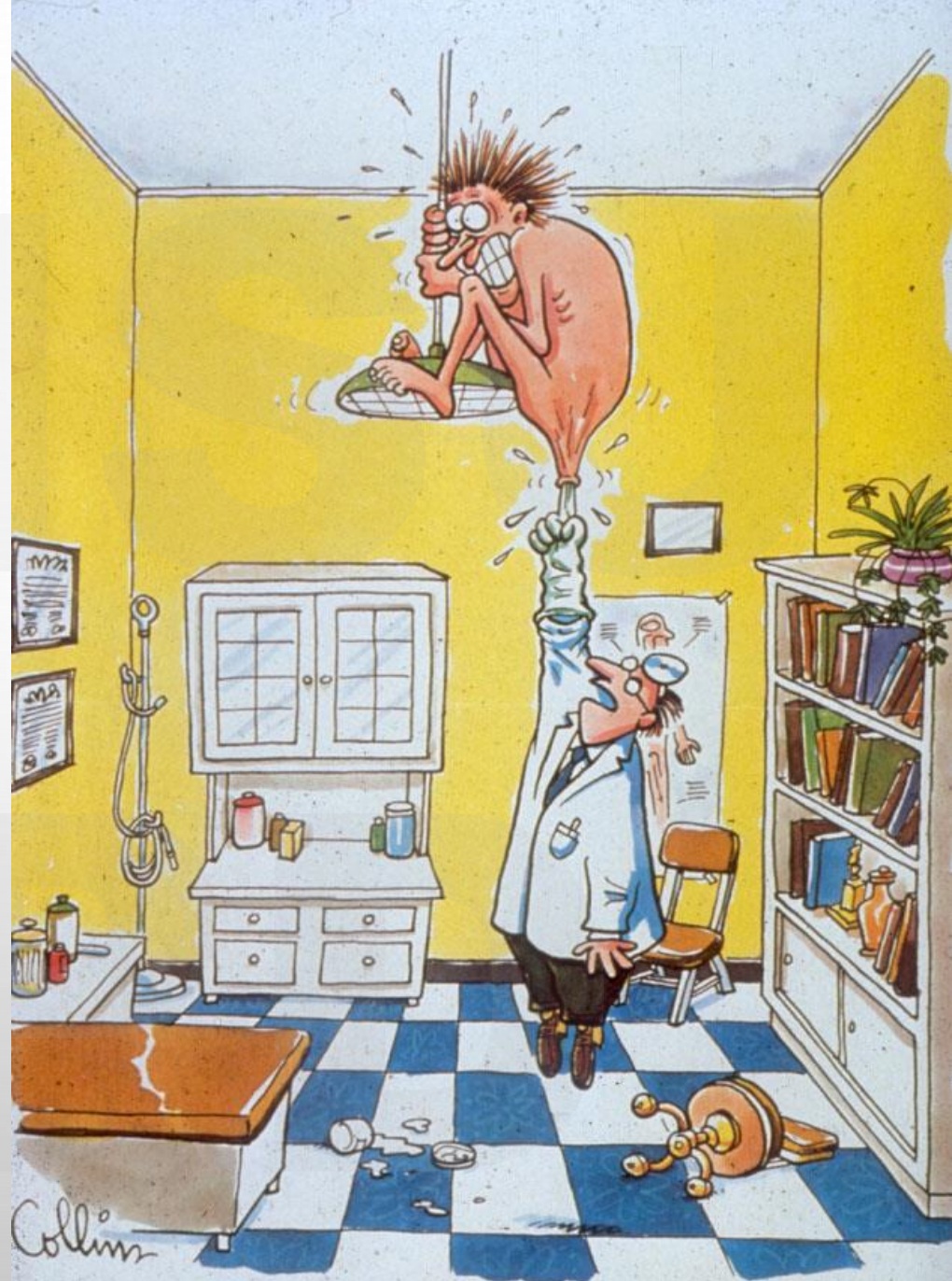
8-19 = moderate symptoms

20-35 = severe symptoms

The Disease Specific Quality of Life Question  
The International Prostate Symptom Score uses the same 7 questions as the AUA Symptom Index (presented above) with the addition of the following Disease Specific Quality of Life Question (both score) scored on a scale from 0 to 6 points (delighted to 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?"

# THE DRE

??? A NECESSARY EVIL...



"Relax, Mr. Thomas: It's just a simple prostate examination!"

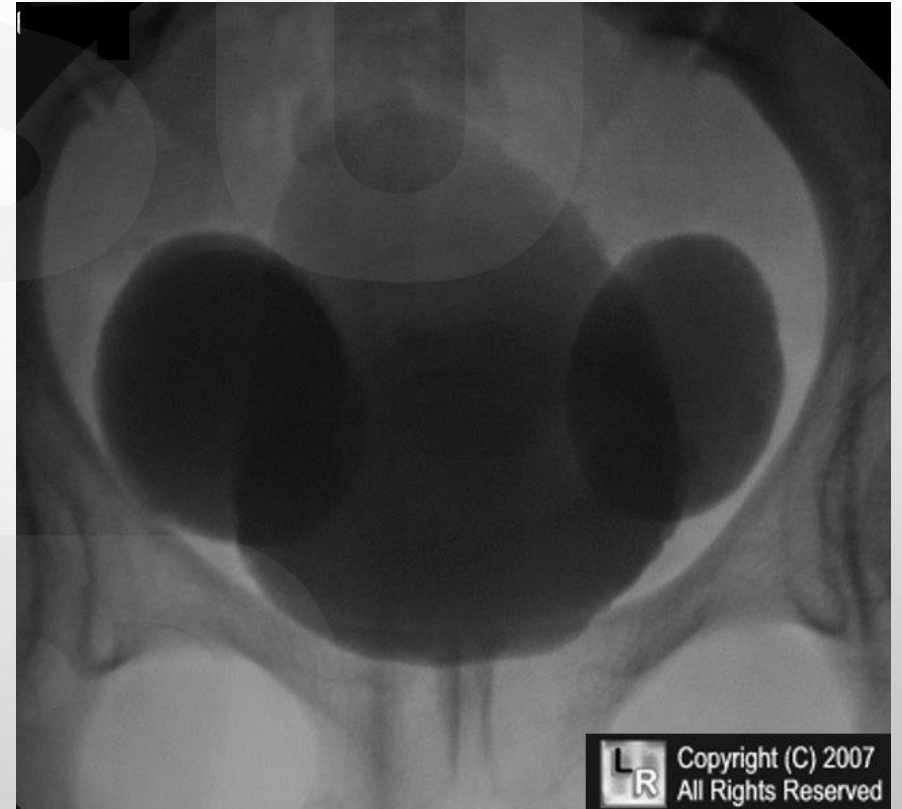
# ANCILLARY TESTS

- PVR (POSTVOID RESIDUAL)
  - BLADDER SCANNER/ULTRASOUND
  - STERILE CATHETERIZATION
- URINE C&S
- ?SERUM CREATININE/BASIC METABOLIC PANEL
- ??PSA (SCREENING)
  - SHARED DECISION-MAKING
    - RISK FACTORS FOR PROSTATE CANCER - ?PRESENT
      - AFRICAN-AMERICAN RACE
      - FAMILY HISTORY - FIRST-DEGREE RELATIVE
      - MATERNAL HISTORY OF BREAST CANCER
      - EXPOSURE TO AGENT ORANGE



# COMPLICATIONS OF BPH

- URINARY RETENTION
- URINARY TRACT INFECTION (UTI)
- BLADDER CALCULI
- DECOMPENSATED BLADDER
- BLADDER DIVERTICULA
- OVERACTIVE BLADDER/URGE INCONTINENCE
- ACUTE OR CHRONIC KIDNEY DISEASE



# BPH: TREATMENT OPTIONS

- **WATCHFUL WAITING** – QUESTION OF BOTHER (AUA SS)
- **MEDICATION**
  - ALPHA BLOCKERS
  - 5 - ALPHA REDUCTASE INHIBITORS (5-ARI)
  - PDE-5 INHIBITOR
- **MINIMALLY INVASIVE PROCEDURES (MIST)**
  - ITIND
  - OPTILUME-BPH
  - REZUM
  - UROLIFT
  - AQUABLATION
- **SURGICAL THERAPIES**
  - TURP
  - MULTIPLE LASER PROCEDURES
  - OPEN OR ROBOTIC SURGERY

# BPH: PHARMACOLOGIC THERAPY

- 3 CLASSES OF DRUGS
  - **ALPHA-ADRENERGIC BLOCKERS**
    - COMPETITIVELY BIND TO ALPHA RECEPTORS ON THE PROSTATIC MUSCLE (STROMA)
    - ALL FELT TO HAVE EQUIVALENT EFFICACY
      - DOXAZOSIN 2-8 MG HS
      - TERAZOSIN 1-10 MG HS
      - TAMSULOSIN (FLOMAX<sup>®</sup>) 0.4 – 0.8 MG HS
      - ALFUZOSIN (UROXATROL<sup>®</sup>) 10 MG QD (WITH FOOD)
      - SILODOSIN (RAPAFLO<sup>®</sup>) 4 MG – 8 MG QD (WITH FOOD)
  - **5-ALPHA REDUCTASE INHIBITORS**
    - FINASTERIDE (PROSCAR<sup>®</sup>) 5 MG QD
    - DUTASTERIDE (AVODART<sup>®</sup>) 0.5 MG QD
  - **PHOSPHODIESTERASE 5 INHIBITOR**
    - TADALAFIL (CIALIS<sup>®</sup>) 5 MG QD

# ALPHA BLOCKADE FOR BPH

- FIRST LINE THERAPY FOR BPH
  - OPENS THE URETHRAL CHANNEL TO FACILITATE EMPTYING
  - USUALLY GIVEN NIGHTLY BECAUSE OF PROPENSITY TO CAUSE **POSTURAL HYPOTENSION**
- OTHER ADES:
  - DIZZINESS
  - ASTHENIA (FATIGUE)
  - EJACULATORY PROBLEMS (RETROGRADE EJACULATION)
  - NASAL CONGESTION
  - WATER RETENTION
  - PALPITATIONS

# 5-ALPHA REDUCTASE INHIBITORS

- RECOMMENDED FOR PATIENTS WITH SYMPTOMATIC BPH
  - PREVENTS PROGRESSION OF DISEASE
  - **DO NOT USE IF NO BPH PRESENT (GLANDS SHOULD BE >30 GM IN SIZE)**
    - DIMINISHES PROSTATE SIZE (TAKES ABOUT 3-6 MONTHS)
    - INCREASES FLOW RATE
    - REDUCES BPH SYMPTOMS
    - REDUCES BLEEDING
  - ADES PRIMARILY INVOLVE SEXUAL FUNCTION
    - MARKEDLY REDUCES OR ELIMINATES EJACULATE VOLUME
    - DECREASED LIBIDO
    - ERECTILE DYSFUNCTION
    - BREAST TENDERNESS/ GYNECOMASTIA
  - LESS EFFECTIVE THAN ALPHA BLOCKERS ALONE  
\*\*\*\*\*
- FINASTERIDE (PROPECIA) IS USED TO STIMULATE HAIR GROWTH IN MEN AND WOMEN WHICH CAN LEAD TO **PFS (POST-FINASTERIDE SYNDROME)**: PROBLEMS WITH ANXIETY, DEPRESSION AND SUICIDE EVEN AFTER DISCONTINUING THE DRUG.

# BPH: MEDICAL TREATMENT

- COMBINATION THERAPY
  - ALPHA BLOCKER + 5-ALPHA REDUCTASE INHIBITOR
  - COMBINATION BETTER THAN EITHER ALONE IN PREVENTING URINARY RETENTION
- BASED ON MTOPS STUDY\*
  - MEDICAL THERAPY OF PROSTATE SYMPTOMS
  - 5-YEAR STUDY WITH DOXAZOSIN + FINASTERIDE
  - 79% REDUCTION OF RETENTION IN COMBINATION THERAPY GROUP

\*J UROL. 2006 JAN;175(1):217-20

# PDE-5 INHIBITOR

- **TADALAFIL (CIALIS<sup>®</sup>) - FINALLY AVAILABLE AS A GENERIC**
  - ORIGINALLY DEVELOPED AS DRUG FOR ERECTILE DYSFUNCTION
  - FDA-APPROVED IN LOW DOSE ONLY FOR LOWER URINARY TRACT SYMPTOMS (5.0 MG/DAY)
  - USED PRIMARILY AS ADJUNCT TO OTHER MEDICATION
  - ADES SIMILAR TO OTHER PDE-5I AGENTS EXCEPT MUSCULOSKELETAL PAIN (PDE-11):
    - HEADACHE, INDIGESTION, FLUSHING, RHINITIS
- **CURRENT PREFERRED TREATMENT FOR BPE WITH BOO AND LUTS IS ALFUZOSIN 10 MG DAILY + TADALAFIL 5 MG DAILY**
  - EFFECTIVE FOR SYMPTOM RELIEF WITH PRESERVED/IMPROVED SEXUAL FUNCTION

# SURGICAL INDICATIONS FOR BPH

- RETENTION REFRACTORY TO MEDICATIONS
- RECURRENT UTI
- REFRACTORY HEMATURIA
- BLADDER CALCULI
- BLADDER DIVERTICULA
- INCONTINENCE
- RETENTION OF URINE
- AKI/CKD

# VOIDING DYSFUNCTION IN MEN

- **WHAT ABOUT THE MEN WHO HAVE LUTS BUT DO NOT HAVE BPE AS THE PRIMARY CAUSATIVE FACTOR?**
  - MEN THAT ARE TOO YOUNG TO HAVE BPH
  - MEN WHO DON'T HAVE A PROSTATE: MEN S/P RADICAL PROSTATECTOMY OFTEN HAVE STRESS INCONTINENCE, BUT THEY CAN STILL HAVE STORAGE SYMPTOMS (URGENCY-FREQUENCY +/- URGE INCONTINENCE) OR OBSTRUCTIVE SYMPTOMS LIKE RETENTION OF URINE (USUALLY FROM IATROGENIC STRICTURE = SCAR TISSUE FROM GU PROCEDURES/SURGERY)
  - MEN WHO ARE SUBJECTED TO SEXUAL, PHYSICAL OR EMOTIONAL TRAUMA EARLY IN LIFE
- **WHAT ABOUT THE MEN WHO PRESENT IN RETENTION?**
  - RETENTION IS DEFINED AS  $\geq 150$  ML IMMEDIATELY FOLLOWING URINATION, BUT THRESHOLD FOR TREATMENT IS 300 ML
    - ACUTE TREATMENT OF SIGNIFICANT RETENTION IS EITHER SELF-CATHETERIZATION (CIC), A FOLEY CATHETER OR A SUPRAPUBIC TUBE
- **UROLOGIC "LAW OF RELATIVITY" IN TREATING RETENTION**
  - SHARED DECISION-MAKING WITH PATIENTS/FAMILY/CAREGIVERS
  - CONSIDERATIONS:
    - DEGREE OF RETENTION
    - TEMPORARY VS. PERMANENT NATURE OF RETENTION. IS IT FIXABLE?
    - PATIENT HAND DEXTERITY, E.G, ABILITY TO PERFORM SELF-CATHETERIZATION
    - PATIENT MOBILITY FOR TOILETING
    - ATTITUDE TOWARD PHARMACOLOGIC VS SURGICAL INTERVENTIONS
    - OPTIMIZATION OF QUALITY OF LIFE

# TREATMENTS FOR MALE VOIDING DYSFUNCTION

- BEHAVIORAL
- PHARMACOLOGIC
- SURGICAL



# BEHAVIORAL THERAPY

- **MODIFICATION OF FLUID INTAKE AND DIET**
  - INCREASE FLUID INTAKE (WATER!)
  - AVOID DIETARY IRRITANTS (CAFFEINE!)
  - INCREASE FIBER + FLUID FOR MANAGEMENT OF CONSTIPATION
    - ADD STOOL SOFTENERS, SENNA, MIRALAX AS INDICATED
- **BLADDER TRAINING**
  - TIMED VOIDING (URINATION ON A SCHEDULE TO AVOID OVER-DISTENTION)
  - DOUBLE-VOIDING TO FACILITATE EMPTYING
  - URGE INHIBITION (BLADDER DISTRACTION)
    - USING KEGELS TO TEMPORARILY SUSPEND URGENCY LONG ENOUGH TO WALK TO THE BATHROOM

# PELVIC FLOOR MUSCLE REHABILITATION

- PELVIC FLOOR REHABILITATION
  - CUSTOMIZED PROGRAM OF PHYSICAL THERAPY INTERVENTIONS TO FACILITATE ALIGNMENT AND SUPPORT OF THE BODY AND ITS PARTS
    - GOAL: RESTORE PELVIC FLOOR INTEGRITY
- BIOFEEDBACK THERAPY
  - USE OF VAGINAL OR RECTAL PROBE WITH ABDOMINAL SENSOR TO HELP PATIENTS FOCUS ON PELVIC FLOOR AND ALTER TENSION AND STRENGTH OF MUSCLE GROUPS
  - USUALLY USED WITH OTHER COMPLIMENTARY MODALITIES
    - TENS DEVICES, ETC.

# PRINCIPLES OF OAB TREATMENT IN MEN

- IN CASES OF URGE, SPONTANEOUS OR MIXED INCONTINENCE, IT IS ALWAYS REASONABLE TO TRY ANTICHOLINERGIC OR BETA-3 AGONIST MEDICATION FIRST
  - THERAPEUTIC TRIAL
- IN MEN WITH POTENTIAL FOR BLADDER OUTLET OBSTRUCTION (BOO), GIVE AN ALPHA-BLOCKER FIRST, THEN ADD AN ANTICHOLINERGIC OR BETA-3 AGONIST FOR OAB SYMPTOMS
  - PRINCIPLE OF “LAYERING OF MEDICATIONS”

# THERAPY OF OAB SYMPTOMS

- MEDICAL THERAPY IS PRIMARY TREATMENT FOR STORAGE SYMPTOMS
  - **ANTICHOLINERGIC (ANTIMUSCARINIC) AGENTS**
    - ANTIMUSCARINIC +/- ANTISPASMODIC ACTIVITY
    - ALL CAUSE DRY MOUTH AND CONSTIPATION TO SOME EXTENT
    - MAY CAUSE COGNITIVE IMPAIRMENT, ADVANCE DEMENTIA OR PRODUCE ALTERED MENTAL STATUS IN THE ELDERLY
  - **BETA-3 AGONISTS**
    - ACTIVATE BETA ADRENERGIC RECEPTORS ON DETRUSOR MUSCLE PRODUCING RELAXATION OF THE MUSCLE FIBERS AND INCREASED BLADDER CAPACITY

# ANTICHOLINERGIC MEDICATIONS

- OXYBUTYNIN (*DITROPAN*<sup>®</sup>, *DITROPAN XL*<sup>®</sup>)
- TOLTERODINE (*DETROL*<sup>®</sup>, *DETROL LA*<sup>®</sup>)
- \*FESOTERODINE (*TOVIAZ*<sup>®</sup>)
- HYOSCYAMINE (*LEVSIN*<sup>®</sup>, *LEVBIID*<sup>®</sup>, *HYOMAX*<sup>®</sup>)
- \*TROSPIUM HCL (*SANCTURA*<sup>®</sup>/*SANCTURA XR*<sup>®</sup>)
- \*DARIFENACIN (*ENABLEX*<sup>®</sup>)
- SOLIFENACIN (*VESICARE*<sup>®</sup>)

# BEST ANTICHOLINERGIC AGENTS FOR THE ELDERLY

- PROBLEMS WITH ANTICHOLINERGICS IN THE AGED
  - ANTICHOLINERGICS HAVE CENTRAL EFFECTS AND CAN CLOUD THE SENSORIUM.
  - THEY CAN ALSO CAUSE QT-SEGMENT PROLONGATION WITH TORSADES DE POINTES
- THREE AGENTS HAVE LEAST RISK FOR THE ELDERLY
  - **TROSPIUM** (QUATERNARY AMINE)
  - **FESOTERODINE** (ONLY ANTICHOLINERGIC STUDIED IN THE FRAIL ELDERLY)
  - **DARIFENACIN** (PUMPED OUT OF BRAIN BY P-GLYCOPROTEIN)

# MODERN DRUG CLASS FOR OAB

- **BETA-3 AGONIST**

- FDA APPROVED JUNE 28, 2012
- FIRST DRUG IN CLASS: **MIRABEGRON (MYRBETRIQ®)**
  - BINDS TO BETA-3 RECEPTORS ON THE DETRUSOR MUSCLE TO PRODUCE RELAXATION DURING THE STORAGE PHASE
- ADVERSE EFFECTS
  - HYPERTENSION
  - HEADACHE
  - RHINITIS
- NEWEST MEDICATION FDA APPROVED DECEMBER 2020: **VIBEGRON (GEMTESA)**
  - MORE RAPID ONSET AND MORE POTENT THAN MIRABEGRON
  - MORE BETA-3 SPECIFIC SO LESS RISK OF CARDIAC EFFECTS
  - NO SIGNIFICANT HYPERTENSION
  - SAFER: NO INHIBITION OF CYTOCHROME P450, CYPD6 OR OTHER CYP ISOENZYMES
  - CRUSHABLE!

# TREATMENT OF NOCTURNAL ENURESIS

- DECREASE FLUID INTAKE AT NIGHT
- CHANGE DIURETIC SCHEDULE: ADMINISTER IN LATE AFTERNOON OR EARLY EVENING
- CATHETERIZE AT BEDTIME (RETENTION)
- IMIPRAMINE 25-50 MG HS AS FOR BEDWETTING IN CHILDREN
- ANTICHOLINERGIC AT BEDTIME
- DDAVP (INTRANASAL OR ORAL) FOR **NOCTURNAL POLYURIA**
  - BEWARE HYPONATREMIA!
  - FOLLOW BASIC METABOLIC PANEL CLOSELY
  - DO NOT EXCEED 0.4 MG DAILY
  - MAY NOW BE USED CAUTIOUSLY IN PATIENTS > 65 YO

# KEY TAKE HOME POINTS

- THE PROSTATE GROWS FROM APPROXIMATELY AGE 40 TO DEATH
- MALE VOIDING DYSFUNCTION CAN BENEFIT FROM PELVIC FLOOR REHABILITATION (PFPT)
- THE TREATMENT OF THE ENLARGED PROSTATE IS BASED ON ESTABLISHED PROSTATE PHYSIOLOGY
- ALPHA BLOCKADE IS FIRST LINE TREATMENT FOR **ANY** CAUSE OF BLADDER OUTLET OBSTRUCTION (BOO) CAUSING STORAGE SYMPTOMS AND INVOLVING
  - BENIGN PROSTATIC OBSTRUCTION (BPO)
  - OBSTRUCTION DUE TO EXTERNAL URINARY SPHINCTER (EUS)/DYSSYNERGIA
  - NEUROLOGIC DISEASE (E.G. PARKINSONS DISEASE)
  - THIS IS BASED ON THE FACT THAT ALPHA – ADRENERGIC RECEPTORS GOVERN FUNCTION OF THE PROSTATIC URETHRA AND EXTERNAL URINARY SPHINCTER
- IN GENERAL, URINARY TRACT OBSTRUCTION OF ANY KIND CAUSES OAB/STORAGE SYMPTOMS IN MEN
- ANTICHOLINERGICS AND BETA-3 AGONISTS ARE NOT CONTRAINDICATED IN OBSTRUCTED MEN, BUT THE OBSTRUCTION HAS TO BE ADDRESSED FIRST
  - “LAYERING” MEDICATIONS CAN OPTIMIZE MALE VOIDING FUNCTION
- NOCTURNAL ENURESIS CAN OCCUR IN ADULTS AS WELL AND SHOULD BE TREATED

**QUESTIONS?**

