

URINARY ISSUES & PROSTATE CANCER

NDAFP BIG SKY MEETING 2026
CLARE HAWKINS MD MSC, FAAPF

OBJECTIVES

1. Use patient-oriented questions and labs to diagnose Benign Prostate Hyperplasia with or without Lower Urinary Symptoms, (LUTS).
2. Prescribe evidence-based interventions for Lower Urinary Tract Symptoms (LUTS) including urinary retention.
3. Understand referral pathways and interventions for elevated PSA levels

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ERIC

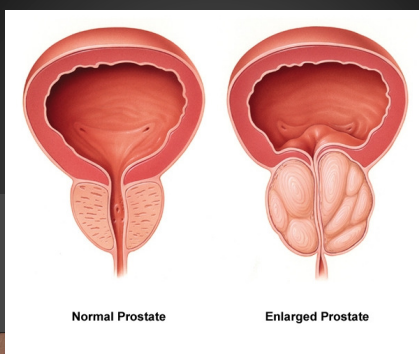
- 72 yo M with infrequent medical care presents with progressive increase in nocturia culminating in inability to void. He had had intermittent urinary tract infections treated at urgent care. He had heard from friends that the medical and surgical treatments for these symptoms could decrease his "masculinity" (erectile function, urinary continence, and sexual desire)
- Now he requires an indwelling urinary catheter and a trial of an alpha blocker prior to evaluation for possible surgical options

QUESTIONS

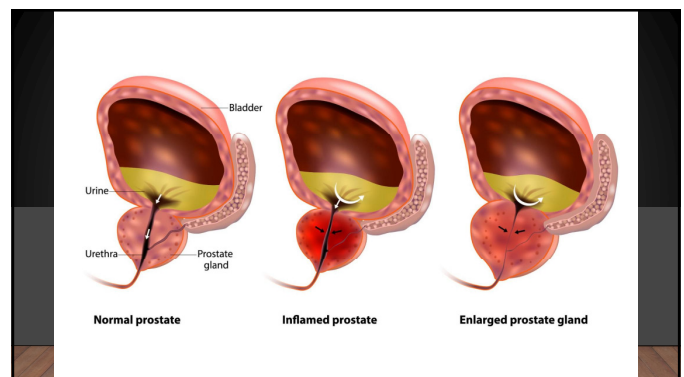
- Should he have had an annual rectal exam?
- Should he have had medical or surgical treatments earlier?
- Could this be a presentation for prostate cancer?
- Can his sexual function be preserved?
- What is the value of a PSA test?

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SYMPTOM GROUPING

Symptom Type	Common Manifestations
Storage	Frequent urination, urgency, nocturia (nighttime urination)
Voiding	Weak stream, starting, intermittent flow
Post-void	Dribbling, incomplete emptying

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BPH EPIDEMIOLOGY 2019

- Incidence: 1.9 million visits and >202,000 visits to the ED led to a primary diagnosis of BPH¹
- Prevalence: 38.1 m men? 30 ½ have at least moderate sx, and only 1/3 receive treatment
- 120,000 prostatectomies were performed .
- 299 010 new diagnoses of prostate cancer were made in the US in 2024²
- CHALLENGES: How to manage localized prostate cancer which may be self-limited while preventing progression to metastatic disease.

¹BPH 2012 46-72 Litwin MS, Saigal CS, eds. Urologic diseases in America. Washington, DC

² National Cancer Institute. Cancer facts: prostate cancer. Accessed March 28, 2024. <https://seer.cancer.gov/statfacts/html/prost.html>

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BPH EPIDEMIOLOGY

- Age Dependent and almost inevitable:
 - Starting at at age 40-45, 60% at age 60, 80% at age 80
- Moderate-to-severe LUTS, rising to nearly 50% by the eighth decade of life
- Not all men with BPH develop BPE (Benign Prostatic Enlargement)
- Only a smaller subset will develop BPO: Benign Prostatic Obstruction
 - (or AUR Acute Urinary Retention)
- BOO: Bladder Outlet Obstruction (Due to BPH and other causes)

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CURIOUS: SAY WHAT?

- BPH Itself does not require treatment and is not the target of therapeutic intervention
- Only if symptomatic: Therefore, symptom diaries & questionnaires
- Growth rate highly variable
- Not all men with BPH will develop BPE (Benign Prostatic Enlargement)
- Not all men develop obstruction
- No direct correlation with cancerous transformation
- "Do enough, but not too much" (primum non nocere)

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Home | Guidelines & Quality | Guidelines | Benign Prostatic Hyperplasia (BPH) Guideline

Guidelines
Guideline Statement
2023 Amendment Panel
Summary

Management of Lower Urinary Tract Symptoms Attributed to Benign Prostatic Hyperplasia: AUA Guideline

- AUA BPH Guideline 2023 <https://doi.org/10.1097/JU.0000000000003698>
- How to evaluate
- Evaluating when to intervene
- Understanding the complex dynamics of the bladder, bladder neck, prostate, and urethra

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AAFP 2023 EVIDENCE REVIEW

Benign Prostatic Hyperplasia: Rapid Evidence Review

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TAKING A HISTORY

- Fluid intake
- History of sleep apnea
- Diabetes mellitus
- Heart failure
- Hypertension
- CKD
- Neurologic disorders
- FHx
- Tobacco use
- Alcohol consumption
- Sexual history
- Current medications
- Preferences
- Fears

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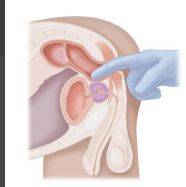
FUNCTIONAL SYMPTOM MEASUREMENT

- Voiding Diary (minimum 3 days) when, how much, how slow
- AUA symptom index
- Measured flow rate (Uroflowmetry)
- Post Void Residual (PVR)
- Ultrasonically measured Residual Volume

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EVALUATING THE ANATOMY

- Digital Rectal ! ?
- Abdominal Ultrasound
- Transrectal Ultrasound
- PVR (ultrasound)
- MRI
- CT Pelvis
- Cystoscopy
- Inconsistent relationship between size and flow rate



Naji L, Randhawa H, Sohani Z, et al. Digital rectal examination for prostate cancer screening in primary care. *Ann Fam Med*. 2018;16(2):140-154.

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DIFFERENTIAL DIAGNOSIS OF LUTS

- Anatomic Foreign body Urethral or bladder neck strictures
- Infections
 - Prostatitis
 - Urethritis or sexually transmitted infections
- Urinary tract infection
- Inflammatory conditions
 - Chronic pelvic pain syndrome or chronic prostatitis
- Malignancy
 - Bladder cancer
 - Prostate cancer
- Medications
 - Anticholinergics (e.g., tolterodine)
 - Antihistamines (e.g., diphenhydramine)
 - Bronchodilators (e.g., albuterol)
 - Diuretics
 - Opioid analgesics
 - Sympathomimetics (e.g., pseudoephedrine)
 - Tricyclic antidepressants (e.g., amitriptyline)
- Neurologic conditions
 - Neurogenic bladder
 - Overactive bladder (detrusor overactivity); can be neurologic, but most cases are idiopathic

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LUTS TREATMENT

- Alpha Blockers
- Bladder Training
- Pelvic Floor Exercises

Elterman D. Beyond Medications — The Promise of App-Based Digital Therapeutics for Lower Urinary Tract Symptoms. March 2025 *NEJM Evid* 2025;4(4)

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BPH DEFINITION

- Obstructive voiding symptoms include urinary hesitancy, delay in initiating micturition, intermittency, involuntary interruption of voiding, weak urinary stream, straining to void, a sensation of incomplete emptying, and terminal dribbling

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LUTS CLINICAL PROGRESSION

- Urinary retention
- Urinary incontinence
- Renal insufficiency
- Recurrent urinary tract infection
- Progression occurred in only **14% of the men** over a follow-up period of 5 years
- Progression is more common in men of older age, increased severity of lower urinary tract symptoms, larger prostate size, increased prostate-specific antigen (PSA) levels, and decreased rates of urinary flow

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IPSS INTERNATIONAL PROSTATE SYMPTOM SCORE (ORIGINALLY AUA SYMPTOM INDEX 1995)

- Validated, self-administered, quantitative measure of severity of LUTS (0-35)

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AUA SCORE AMERICAN UROLOGICAL ASSOCIATION INTERNATIONAL PROSTATE SYMPTOM SCORE

1. Incomplete emptying: How often have you had the sensation of not emptying your bladder?
 1. Not at all to almost always (5 point score)
2. Frequency: How often have you had to urinate less than every two hours?
3. Intermittency: How often have you found you stopped and started again several times when you urinated?
4. Urgency: How often have you found it difficult to postpone urination?
5. Weak stream: How often have you had a weak urinary stream?

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IPSS CONTINUED

6. Straining: How often have you had to strain to start urination?
 7. Nocturia: How many times do you typically get up at night to urinate?
- Seven Questions x 5 points = 35 plus 7 total
 - **ADDITIONAL QUALITY OF LIFE QUESTION**
 - 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? (7 choices)
 - Delighted, Pleased, Mostly Satisfied
 - Mixed, Mostly dissatisfied, Unhappy, Terrible

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TREATMENT CHOICES

- **Mild symptoms (score 0-7):** Often managed with behavioral and lifestyle modifications and routine monitoring.
- **Moderate to severe symptoms (score 8-35):**
 - Consider alpha-blockers, 5-alpha-reductase inhibitors, antimuscarinics, beta-3 agonists, or combination therapy.
 - For severe cases unresponsive to medical therapy, surgical options may be explored.

Elterman D. Beyond Medications — The Promise of App-Based Digital Therapeutics for Lower Urinary Tract Symptoms March 2025 NEJM Evid 2025;4(4)

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ALPHA BLOCKERS

- Fast Acting, weeks to a month
- **Non-Selective:** doxazosin, silodosin, or terazosin
 - Antihypertensive effect
- **Selective:** tamsulosin, alfuzosin
 - More likely than non-selective to cause ejaculatory dysfunction
 - Less likely to cause hypotension
 - Use prior to a voiding trial to treat patients with AUR (Urinary Retention)
 - If passing Trial Without a Catheter (TWOC), advise increased risk for future AUR

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ALPHA BLOCKER SIDE EFFECTS

- Floppy Iris Syndrome
 - If cataract surgery is being considered, avoid alpha blockers until ophthalmologist evaluation because of associated floppy iris syndrome

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5 ALPHA REDUCTASE INHIBITORS (5-ARI)

- If > 30 g
- If PSA > 1.5 (indirect measure of prostate volume)
- Slow to take effect (2-12 months) but benefits last up to 10 years
- Can combine with Alpha Blocker
- NNT = 20 compared to surgery, can prevent retention and surgery
- Caution in the interpretation of PSA values (may half the value and mask malignancy)
- Side Effects:
 - ED, decreased libido, and abnormal ejaculation (1 per 100 person years)

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PDE-5

- Tadalafil 5 mg daily, especially in those with erectile dysfunction
- Irrespective of comorbid ED
- Low dose daily tadalafil 5mg with finasteride

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ANTICHOLINERGIC

- Solifenacin, Oxybutynin, and tolterodine
 - Evidence of benefit is uncertain
 - Limited by risks of acute urinary retention, dementia, and mental status changes, especially in older men
- Medicare Poly-ACH quality measure
 - No more than 30 days of > 1 anticholinergic

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OTHER TREATMENTS

- Beta-3 agonist mirabegron does not improve lower urinary tract symptoms more effectively than placebo
- Desmopressin appears to minimally improve nocturia compared with placebo

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NUTRACEUTICALS

- **Saw Palmetto:** American dwarf palm tree, which is the most commonly found ingredient in Prostate supplements. Determined to have no benefit
 - 32 long-term randomized controlled trials of 5,666 men
- *Pygeum africanum:* African cherry
- Beta-sitosterol, a phytotherapeutic compound, appears to improve urinary symptoms and flow measures; however, its long-term effectiveness and safety are unknown

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SURGERY

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BPH SURGERY INDICATIONS

- Renal Insufficiency from Retention
- Refractory urinary retention secondary to BPH
- Recurrent urinary tract infections (UTIs)
- Recurrent bladder stones or gross hematuria due to BPH
- LUTS/BPH refractory to or unwilling to use other therapies.

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OPTIONS: DEBULKING/ CAVITATING

- TURP (Transurethral Resection of Prostate) Level B evidence (B)
 - Monopolar
 - Bipolar
- Open Prostatectomy, laparoscopic, or robotic assisted prostatectomy (C)
- Laser Enucleation Holmium laser enucleation of the prostate (HoLEP) or thulium laser enucleation of the prostate (ThuLEP) should be considered as an option, depending on the clinician's expertise with these techniques, as prostate size-independent options for the treatment of LUTS/BPH (B)
- PAE Prostate Artery Embolization performed by clinicians trained in this interventional radiology procedure following a discussion of the potential risks and benefits ©

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MORE LIMITED THERAPIES

- TUIP Trans urethral incision of the prostate or patients with prostates $\leq 30g$ (B)
- TUVAP Transurethral Vaporization of the Prostate Bipolar may be offered as an option to patients for the treatment of LUTS/BPH (B)
- RWT Robotic waterjet treatment may be offered as a treatment option to patients with LUTS/BPH provided prostate volume 30-80g (C)

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NEWER THERAPIES

- PVP Photoselective Vaporization of the Prostate 120W or 180W platforms for the treatment of LUTS/BPH (B)
- PUL Prostatic Urethral Lift (C) provided prostate volume 30-80g and verified absence of an obstructive middle lobe. A treatment option to eligible patients who desire preservation of erectile and ejaculatory function
- WVT Water Vapor Thermal Therapy should be considered as a treatment option for patients with LUTS/BPH provided prostate volume 30-80g (C) A treatment option to eligible patients who desire preservation of erectile and ejaculatory function
- TIPD may be offered as a treatment option for patients with LUTS/BPH provided prostate volume is between 25 and 75g and lack of obstructive median lobe. (*Expert Opinion*)

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ELEVATED PSA

AND CANCER ! ? !

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PROSTATE CANCER EPIDEMIOLOGY

- Cell Type Adenocarcinoma (≥99%)
- Median age at diagnosis 67 years
- 50% attributable to genetic factors; older age and Black
- 173/100,000 Black vs 97/100,000 White
- Guidelines encourage shared decision-making for prostate-specific antigen (PSA) screening.

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SHARED DECISION MAKING?

- 75% of cancer is localized to the prostate, 5-year survival rate of nearly 100%
- 10% present with de novo metastatic disease, and their 5-year survival rate is 37%
- Risk stratification: Life expectancy, tumor grade (Gleason score), tumor size, and PSA level
 - **ACTIVE SURVEILLANCE:** One-third of patients with localized prostate cancer are appropriate with serial PSA measurements, prostate biopsies, or magnetic resonance imaging, and initiation of treatment if the Gleason score or tumor stage increases.
 - For patients with higher-risk disease, radiation therapy or radical prostatectomy are reasonable options

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THREE CHOICES

- Active surveillance
- Prostatectomy
- Radiation therapy

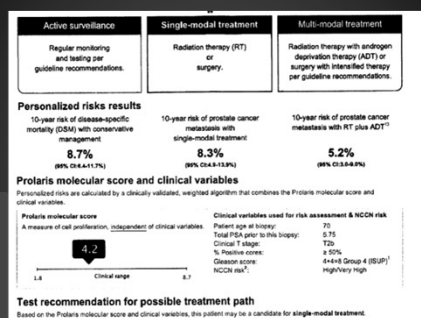
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SHARED DECISION MAKING

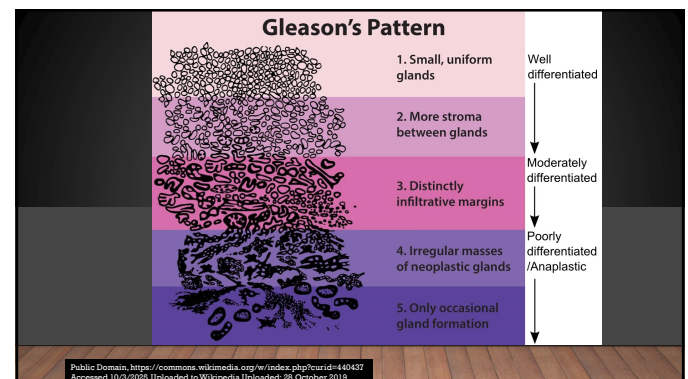
- Balance adverse events and comorbidities. With prevention of advanced disease or death. Despite definitive therapy, 2% to 56% of men with localized disease develop distant metastases, depending on tumor risk factors.
- 14% of patients have metastases to regional lymph nodes. An additional 10% of men have distant metastases that are associated with a 5-year survival rate of 37%.

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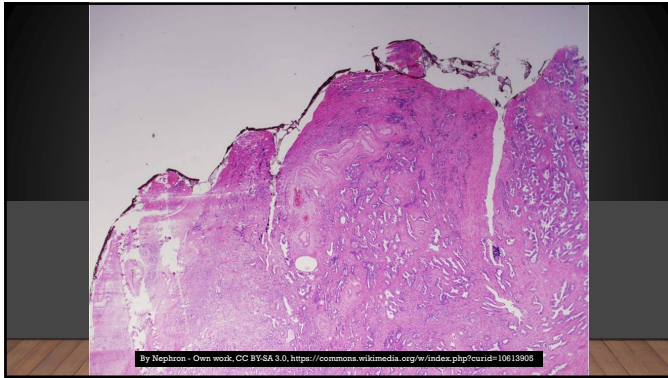
Example
Statistical
Risk and
Recommendation



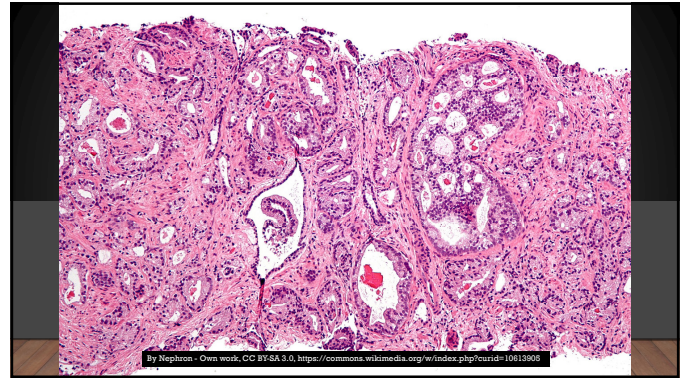
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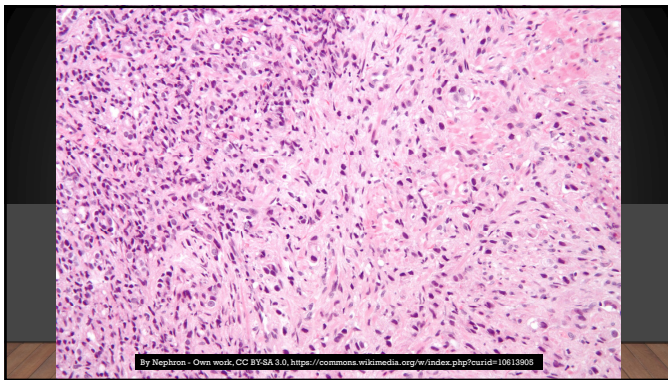
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METASTASES

- Bone is most commonly involved metastatic site (82%), and may cause bone pain and fractures
 - 35% have vertebral compression fracture over 2 years
- Metastases to distant lymph nodes (34%)
- Visceral organs (5%)

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SCREENING & SHARED DECISION MAKING

- USPSTF 2018
- AUA 2023 recommends q 2-4 y age 50-69 and more often in high-risk populations, such as Black men (*genes involved in DNA damage repair* particularly *BRCA1* or *BRCA2*), or those with a family history of prostate cancer
- Prostate Cancer Foundation:

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Risk category	Definition ^b	Life expectancy	Treatment options
Very low	Grade group 1, PSA level <10 ng/mL, <3 core biopsy samples positive for cancer, and ≤50% cancer cells in each core biopsy sample	≥10 y <10 y	Active surveillance Observation
Low	Grade group 1, PSA level <10 ng/mL, and clinical cancer stage T1-T2a (nonpalpable tumor by rectal examination or involving less than half of the prostate)	≥10 y <10 y	Active surveillance preferred; RT or radical prostatectomy Observation or RT
Favorable intermediate	≤1 Intermediate risk factor, grade group 1 or 2, and <50% of core biopsy samples positive for cancer	>10 y <10 y	Active surveillance; RT or radical prostatectomy with or without pelvic lymph node dissection Observation preferred; RT
Unfavorable intermediate	2 or 3 Intermediate risk factors, grade group 3, and ≥50% of core biopsy samples positive for cancer	≥10 y <10 y	RT and ADT for 4-6 mo or radical prostatectomy and pelvic lymph node dissection RT and ADT or observation
High	Clinical cancer stage T3a (extension through prostatic capsule, but no seminal vesicle involvement), grade group 4 or 5, or PSA level >20 ng/mL	>5 y or Symptomatic <5 y	RT and ADT or radical prostatectomy and pelvic lymph node dissection RT, ADT, or observation
Very high	Clinical cancer stage T3b-T4 (seminal vesicle involvement and invasion of adjacent structures), primary grade group 5, and ≥2 high-risk features	>5 y or Symptomatic <5 y	RT and ADT along with abiraterone or radical prostatectomy and pelvic lymph node dissection RT, ADT, or observation

Abbreviations: ADT, androgen deprivation therapy; PSA, prostate-specific antigen; RT, radiation therapy.

^a Adapted from the National Comprehensive Cancer Network.²⁰

^b The Gleason grading system is used to evaluate the aggressiveness of prostate cancer cells based on the architectural pattern observed in a standard prostate biopsy using 10 to 12 core biopsy samples. Each core biopsy sample is given

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TREATMENT

- Androgen deprivation therapy, most commonly through "medical castration" with **gonadotropin-releasing hormone agonists**
 - Leuprolide acetate
- Androgen receptor pathway inhibitors (eg, darolutamide, abiraterone) improves survival from 36.5 months to 53.3 months
- GnRH antagonists: Relugolix, Degarelix
 - Blocks GnRH receptor in the anterior pituitary, preventing release of LH & FSH

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ANDROGEN RECEPTOR PATHWAY INHIBITORS

- Darolutamide (Nubeqa), Abiraterone (Zytiga) inhibits the enzyme CYP17 and reduces the production of androgens (male hormones like testosterone) from testes, adrenal and the tumor
- Metastatic high-risk castration-sensitive prostate cancer (**mCSPC**): Cancer that has spread but is still responding to standard hormone therapy.
- Metastatic castration-resistant prostate cancer (**mCRPC**): Cancer that has spread to other parts of the body and is no longer responding to standard hormone therapy that reduces testosterone.

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SIDE EFFECTS: FROM ANDROGEN DEPRIVATION OR MINERALOCORTICOID

- Fatigue
- High blood pressure (hypertension)
- Fluid retention and swelling in the legs or feet (edema)
- Low potassium levels (hypokalemia)
- Joint pain or swelling
- Headache
- Diarrhea
- Heartburn
- Upper respiratory tract infections
- Liver problems
- Cardiac disorders, such as heart arrhythmia
- Severe muscle weakness
- Bone fractures
- Drug Interactions
 - CYP3A4, CYP2D6, and P-glycoprotein
 - Higher concentration TCA Opiates

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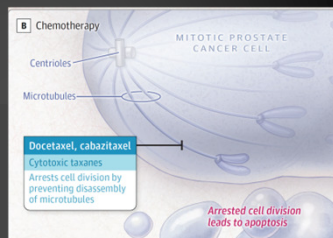
RECENT ADVANCES

- New diagnostic tools, such as prostate cancer-specific positron emission tomography (PET)
- More effective androgen receptor inhibition
- Cytotoxic chemotherapy
- Cell surface antigen-targeted therapies
- Poly ADP-ribose polymerase (PARP) inhibition
 - In absence of homologous recombination repair (HRR), accumulated DNA damage occurs in tumor cells with inhibition of PARP

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CYTOTOXIC CHEMOTHERAPY

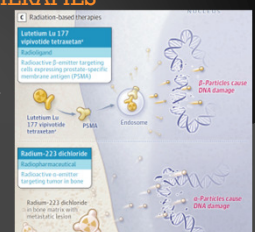
- Docetaxel
- Cabazitaxel
- Cytotoxic taxanes
- Arrests cell division by preventing disassembly of microtubules



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RADIATION BASED THERAPIES

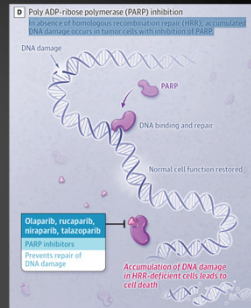
- Radioligand: Lutetium Lu177 vipivotide tetraxetan
 - Beta emitter targeting cells expressing prostate-specific membrane Antigen. (PSMA)
- Radium-223 dichloride in bone matrix with metastatic lesion
 - Targeting tumor in bone, radioactive alpha emitter



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POLY ADP-RIBOSE POLYMERASE (PARP) INHIBITION

- PARP Inhibitors: Olaparib, rucaparib, niraparib, talazoparib
 - In absence of homologous recombination repair (HRR), accumulated DNA damage occurs in tumor cells with inhibition of PARP



BONE STRENGTHENING

- Denosumab or bisphosphonate adjunct to reduce skeletal adverse events such as risk of fracture
- Alendronate or infusion of Zoledronic Acid

SUMMARY

- BPH diagnosis and treatment is focused on symptom inventory
- Medical treatment tries to minimize side effects, improve flow and prevent bladder hypertrophy
- BPH Surgical Treatment options are growing and require shared decision making
- PSA screening should be tailored to specific patient risk with shared decision making
- Elevated PSA may require watchful waiting or diagnosis of Prostate Cancer