



University of California  
San Francisco

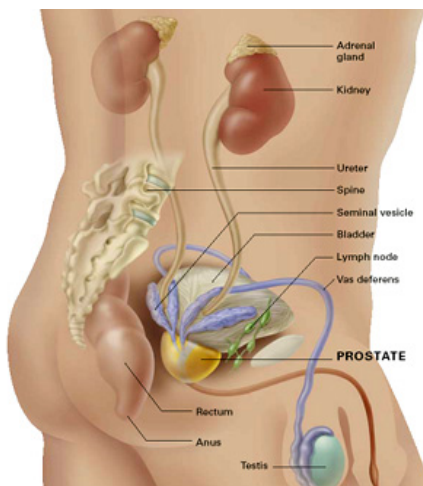
## The Prostate Gland What Do I Need to Know?

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Department of Urology and  
UCSF Helen Diller Family Comprehensive Cancer Center  
University of California, San Francisco

Osher, 2018

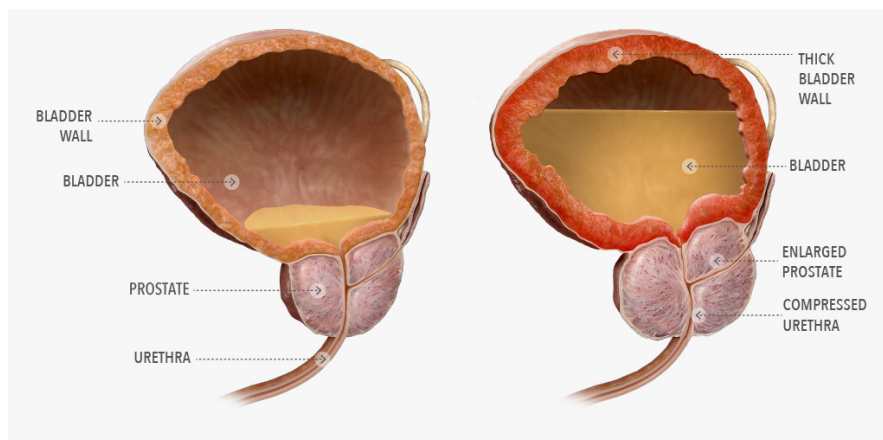
### What is the Prostate Gland?

- Walnut-sized gland at base of the male bladder
- Surrounds the urethra
- Produces fluid that transports sperm during ejaculation
- Important Diseases
  - Benign enlargement - BPH
  - Infection – Prostatitis
  - Prostate Cancer



## Benign Prostatic Hypertrophy (Enlargement)

### BPH



## BPH (E) - Symptoms

- Frequency
- Nocturia (getting up at night)
- Reduced force and caliber of stream
- Interrupted or intermittent stream
- Incomplete emptying

**AUA SYMPTOM SCORE (AUASS)**

PATIENT NAME: \_\_\_\_\_ TODAY'S DATE: \_\_\_\_\_

(Circle One Number on Each Line)	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
Over the past month or so, how often have you had a sensation of not emptying your bladder completely after you finished urinating?	0	1	2	3	4	5
During the past month or so, how often have you had to urinate again less than two hours after you finished urinating?	0	1	2	3	4	5
During the past month or so, how often have you found you dribbled and started again several times when you urinated?	0	1	2	3	4	5
During the past month or so, how often have you found it difficult to postpone urination?	0	1	2	3	4	5
During the past month or so, how often have you had a weak urinary stream?	0	1	2	3	4	5
During the past month or so, how often have you had to push or strain to begin urinating?	0	1	2	3	4	5
	None	1 Time	2 Times	3 Times	4 Times	5 or More Times
Over the past month, how many times per night do you need to wake up and urinate more than the time you went to bed or right after the time you got up in the morning?	0	1	2	3	4	5

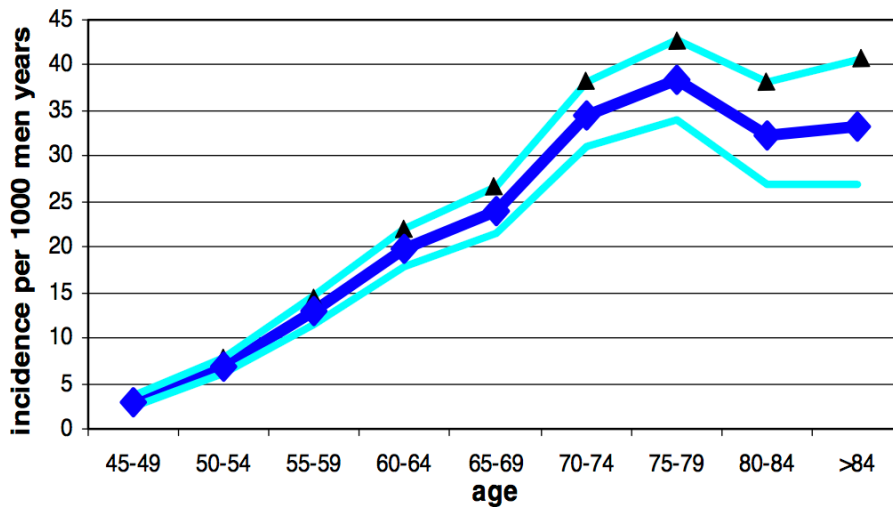
Add the score for each number above and write the total in the space to the right. TOTAL: \_\_\_\_\_

SYMPTOM SCORE: 1-7 (Mild) 8-19 (Moderate) 20-35 (Severe)

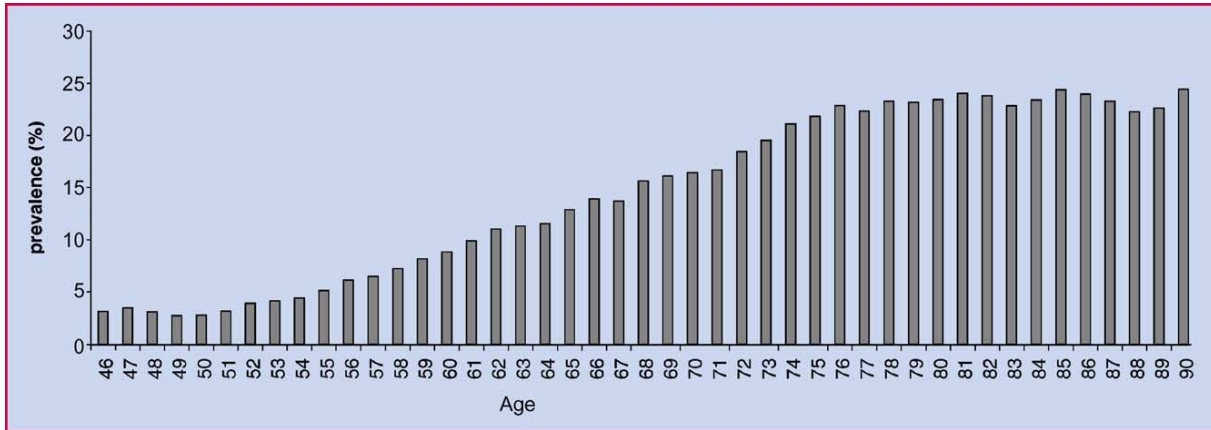
**QUALITY OF LIFE (QOL)**

	Delighted	Pleased	Slightly satisfied	Mixed	Mostly dissatisfied	Unhappy	Terrible
How would you feel if you had to live with your urinary condition the rest of your life? (circle one letter, no scores for the rest of your life)	0	1	2	3	4	5	6

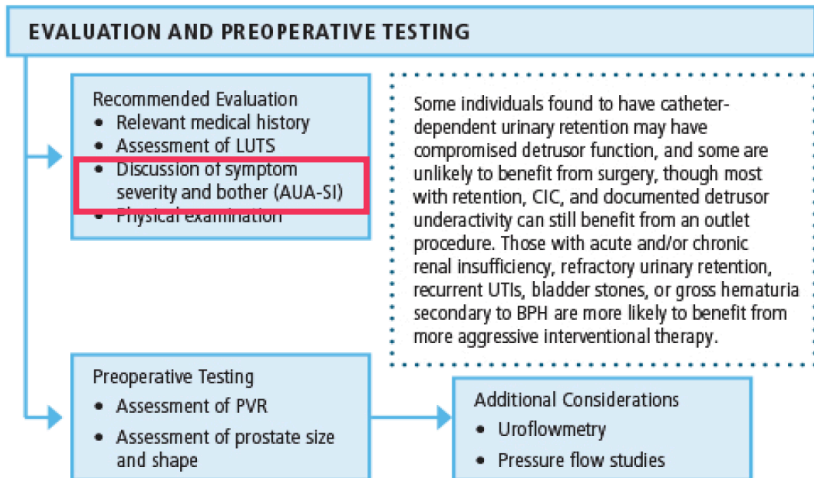
## Age and BPH Incidence



## Age and BPH Prevalence



## AUA Guidelines for Evaluation



# AUA Symptom Score

AUA SYMPTOM SCORE (AUASS)

PATIENT NAME: \_\_\_\_\_ TODAY'S DATE: \_\_\_\_\_

(Circle One Number on Each Line)	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
Over the past month or so, how often have you had a sensation of not emptying your bladder completely after you finished urinating?	0	1	2	3	4	5
During the past month or so, how often have you had to urinate again less than two hours after you finished urinating?	0	1	2	3	4	5
During the past month or so, how often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5
During the past month or so, how often have you found it difficult to postpone urination?	0	1	2	3	4	5
During the past month or so, how often have you had a weak urinary stream?	0	1	2	3	4	5
During the past month or so, 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
Over the past month, how many times per night do you most typically get up to urinate from the time you want to bed at night until the time you get up in the morning?	0	1	2	3	4	5

- Low score 0 - 7
- Moderate score 8 - 19
- High score 20 - 25

Add the score for each number above and write the total in the space to the right. TOTAL: \_\_\_\_\_

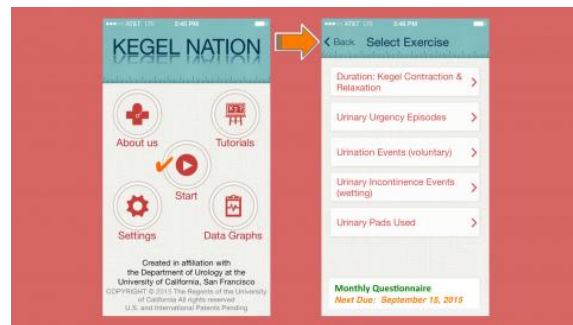
SYMPTOM SCORE: 1-7 (Mild) 8-19 (Moderate) 20-35 (Severe)

### QUALITY OF LIFE (QOL)

	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly Dissatisfied	Unhappy	Terrible
How would you feel if you had to live with your urinary condition the way it is now, no better, no worse, for the rest of your life?	0	1	2	3	4	5	6

# Behavioral Therapy

- Timed voiding, void when feel first urge
- Fluid restriction before bedtime
- Avoid caffeine
- Limit the use of [decongestants](#) or [antihistamines](#)
- **Eat a healthy diet and stay active:** Obesity is a [comorbidity](#) of BPH and staying fit can reduce the incidence of LUTS secondary to BPH
- [Pelvic floor muscle training](#) may be effective



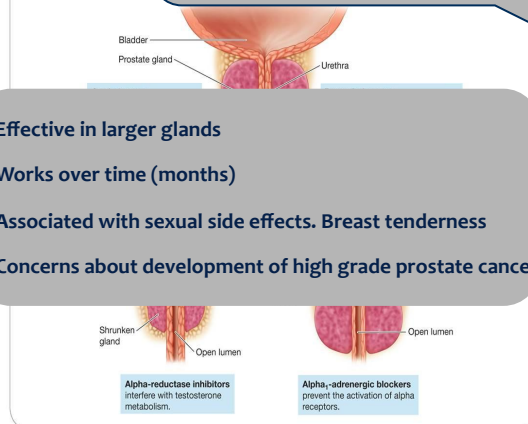
## Medications

### 5 alpha reductase inhibitors

- Finasteride (Proscar)
- Dutasteride (Avodart)

#### PHARMACOTHERAPY

Mechanism of Action of Antihypertensives

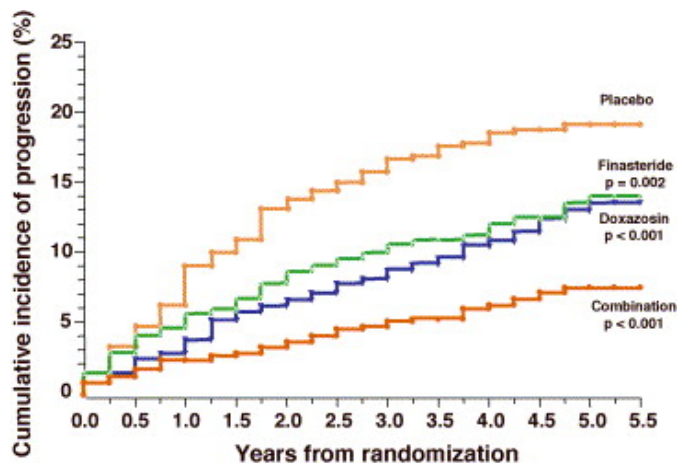


Effective for small, moderately enlarged glands  
Rapid onset of action  
Associated with low blood pressure, retrograde ejaculation

Effective in larger glands  
Works over time (months)  
Associated with sexual side effects. Breast tenderness  
Concerns about development of high grade prostate cancer

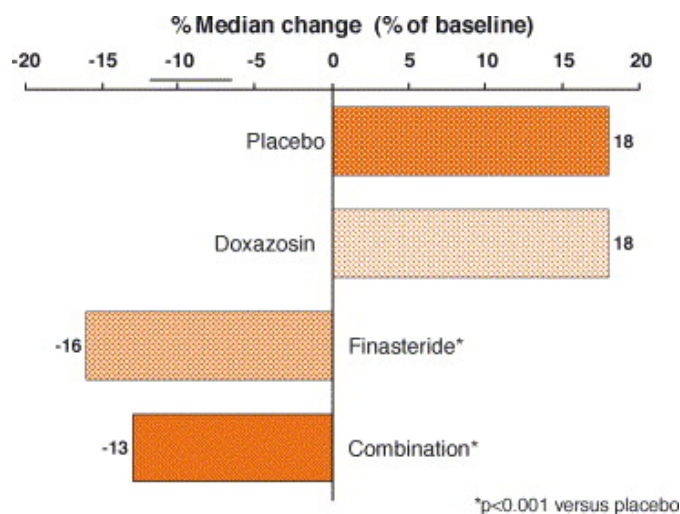
- Tamsulosin (Flomax)
- Terazosin (Hytrin)
- Alfuzosin (Uroxatral)
- Doxazosin (Cardura)
- Sildenafil (Rapaflo)

## MTOPS — more than 3000 men randomized to finasteride, doxazosin, combination or placebo



\* Time to first occurrence of a confirmed >4-point increase in the American Urological Association Symptom Index (AUA-SI), occurrence of AUR, renal insufficiency, incontinence, or recurrent urinary tract infection

## MTOPS



European Urology Supplements 2006 5, 628-633DOI: (10.1016/j.eursup.2006.05.002)  
Copyright © 2006 European Association of Urology [Terms and Conditions](#)

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## Lower urinary tract symptoms (LUTS) and erectile dysfunction (ED)

- Both are common
  - ED 12% to 47%
  - LUTS as high as 81%
- Men with LUTS are @ 3 times more likely to have ED
- Various theories
- Tadalafil (Cialis™) increases blood flow, decrease smooth muscle tension

Tadalafil 5 mg significantly improved the IIEF erectile function domain score in sexually active men with ED (6.7 versus 2.0;  $p < 0.001$ ) at 12 weeks  
Higher better

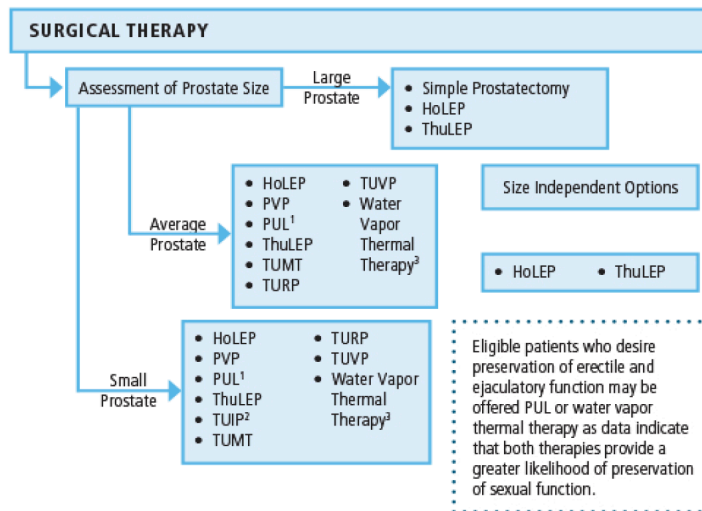
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4054509/>

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## Indications for surgery

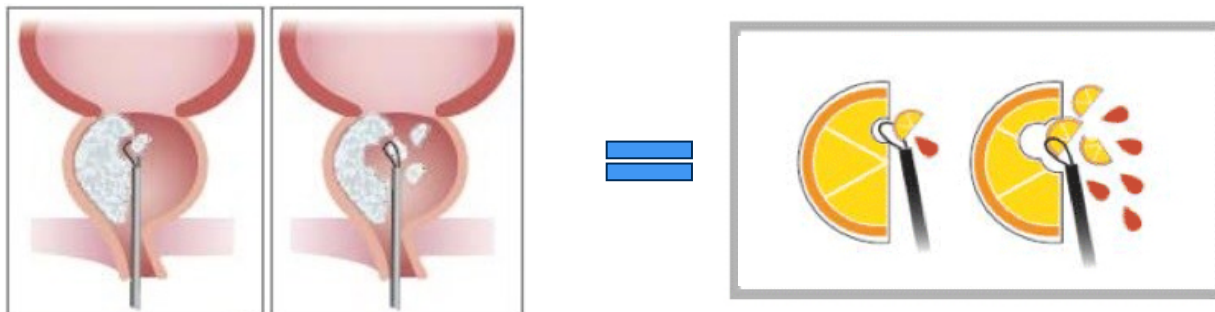
- Failure or intolerance of medical therapy
- Renal failure
- Recurrent infection
- Complete urinary retention
- Bladder stones
- Bleeding due to BPH

## AUA Guidelines for Management



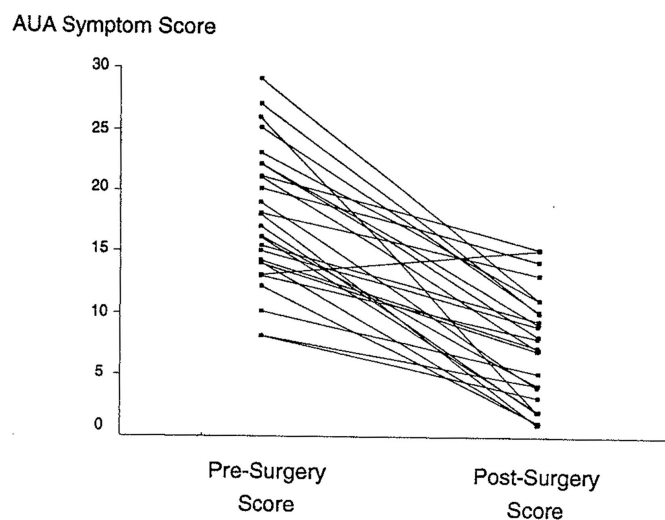


## TURP: Transurethral resection

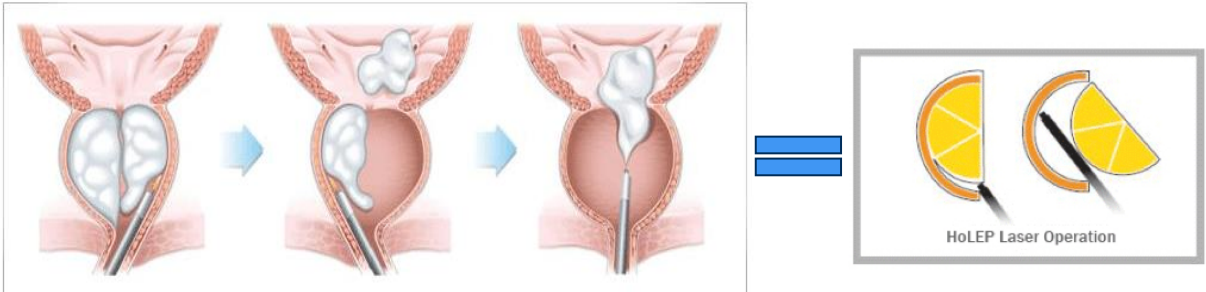


- Use of electrocautery to cut or vaporize the obstructive tissue
- Analogous to scooping the meat from an orange slice

## AUA Symptom Score – How is it affected by treatment?

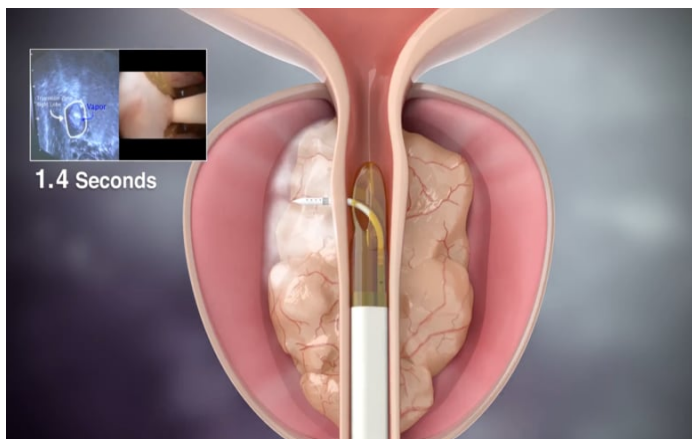


## HoLEP: Holmium Laser Enucleation of Prostate



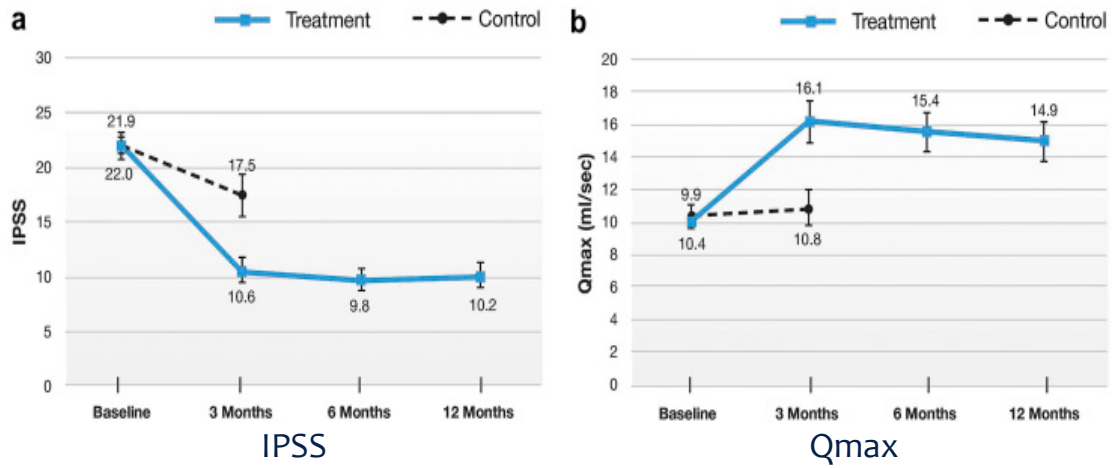
- Use of laser to separate the BPH tissue from the prostate capsule
- Analogous to removing the meat from an orange slice while leaving the rind in place

## Rezüm

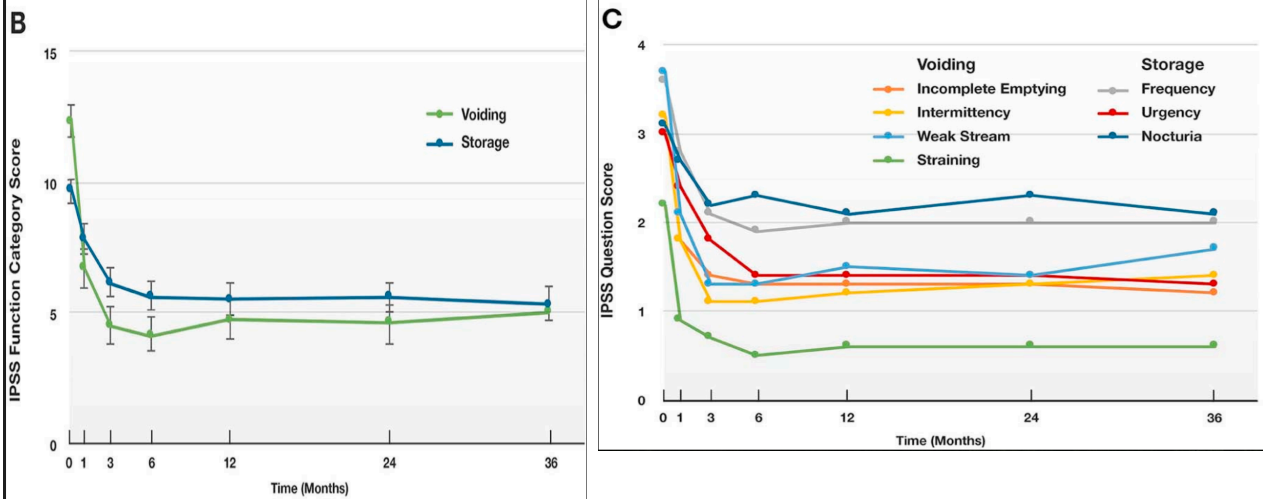


- Uses water vapor to deliver thermal energy to the gland
- Vapor injected into prostatic tissue, causing cell death to target area
- Treated tissue then sloughs and is resorbed over time

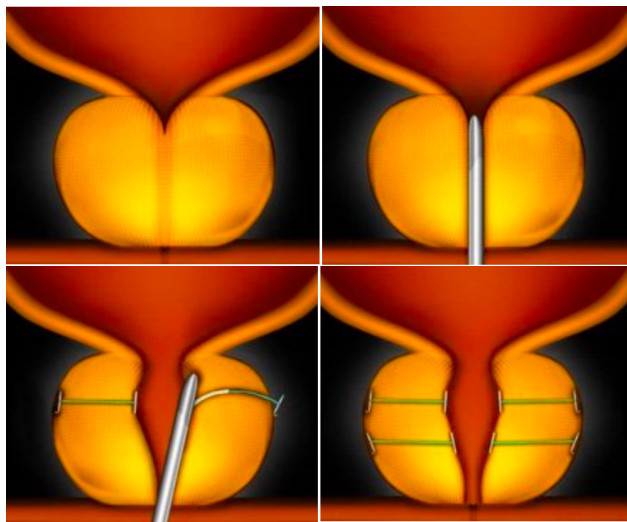
## Early impact of symptoms



## On longer follow-up



## Urolift



- In-office procedure for BPH
- Implants applied to the gland through the urethra
- Implants lift and compress the obstructing tissue against the capsule/wall
- increases the opening of the urethra

## BPH - Approach

- Measure symptoms score
- If low, but bothersome, consider behavioral therapy
  - Timed voiding, avoid bladder irritants, pelvic floor exercises
- If moderate to high, consider medical therapy first
  - Alpha blockade ("Flomax™")
  - 5 - alpha reductase inhibitors for large prostate glands ("Proscar, Avodart™")
  - Consider Cialis if sexually active and suffering from ED
- If you fail medical therapy, consider surgical therapy

## Prostatitis

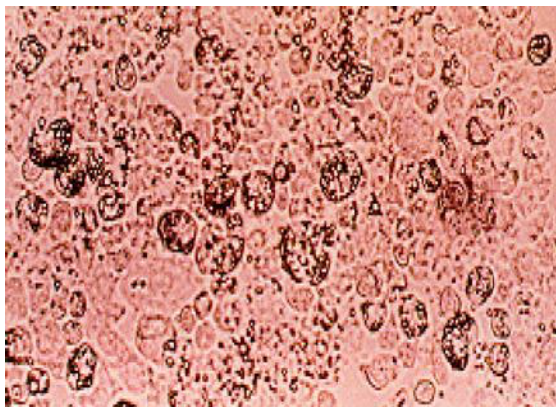
## Prostatitis

- Prostatitis is an infection or inflammation of the several syndromes with varying clinical features.
- Approximately 8.2% of men have prostatitis at some point in their lives.
  - The 4 syndromes of prostatitis are as follows:
    - I - [Acute bacterial prostatitis](#)
    - II - [Chronic bacterial prostatitis](#) (most common)
    - III - Chronic prostatitis and [chronic pelvic pain syndrome](#) (CPPS; further classified as inflammatory or noninflammatory)
    - IV - Asymptomatic inflammatory prostatitis

Fever  
Chills  
Malaise  
Arthralgias  
Myalgias  
Perineal/prostatic pain  
Dysuria  
Urinary tract symptoms,  
Low back pain  
Low abdominal pain

## Prostatitis - Management

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Bacterial prostatitis – WBC in prostatic fluid

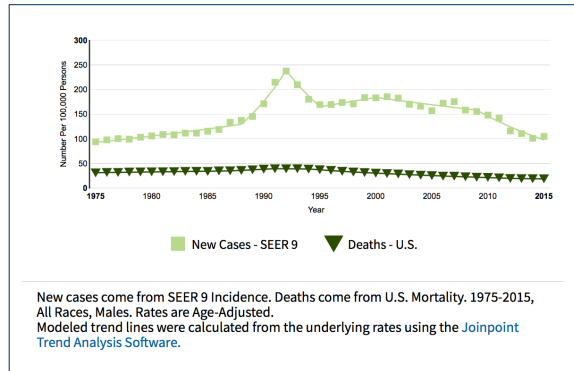
- Antibiotics – bacterial
- Antibiotics, NSAIDs, alpha – blockers
- Chronic pelvis pain – specialist referral

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## Prostate Cancer

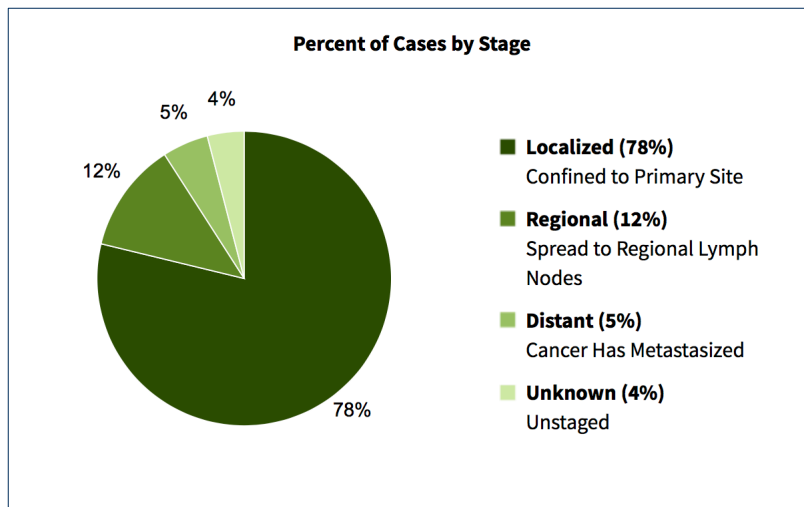
## Prostate Cancer in the US

- 164, 690 new cases in 2018 (9.5% of all new cancer cases in men)
- 29, 430 deaths (4.8%)
- Lifetime risk 11.2%
- 3,120,176 men living with prostate cancer
- More common in AA men and those with a family history of prostate cancer



<https://seer.cancer.gov/statfacts/html/prost.html>

## Prostate Cancer in the US



<https://seer.cancer.gov/statfacts/html/prost.html>

## 2012, we were here

Annals of Internal Medicine



### SCREENING FOR PROSTATE CANCER

CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

Population	Adult Males
Recommendation	Do not use prostate-specific antigen (PSA)-based screening for prostate cancer.
	Grade: D

Do not use prostate-specific antigen (PSA)-based screening for prostate cancer.

# D recommendation

Moyer et al. Ann Intern Med 2012. 157(2):120-34.



## Screening update: a very brief summary

- Throughout the 1990s and 2000s, prostate cancer screening was implemented poorly. Older men were over - screened, younger men were under - screened, low-risk disease was over-treated, and high-risk disease was under-treated.
- Despite all these problems, mortality rates were driven down >50%—but at the cost of too much entirely avoidable treatment and its attendant side effects.
- “Screen none” was not the right solution; rather we needed to screen *smarter*.

Slide courtesy of M. Cooperberg





## 2018, we are here

Annals of Internal Medicine



### SCREENING FOR PROSTATE CANCER

CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

Population	Adult Males
Recommendation	Do not use prostate-specific antigen (PSA)-based screening for prostate cancer.



The USPSTF recommends individualized decision making about screening for prostate cancer after discussion with a clinician, so that each man has an opportunity to understand the potential benefits and harms of screening and to incorporate his values and preferences into his decision

<https://screeningforprostatecancer.org>

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## Rationale for Screening

- Burdensome disease when detected late
- No cure for very late stage disease
- Screening detects disease at earlier stage
- Screening and early treatment of some men reduces the risk of dying of prostate cancer

Stat Methods Med Res, **13**: 421, 2004, Cancer Causes Control, **19**: 175, 2008b, N Engl J Med, **352**: 1977, 2005, N Engl J Med, **360**: 11320-8, 2009, Urology, **58**: 417, 2001

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## PROSTATE CANCER

Great Controversy on Screening and Treatment

### *Important Questions*

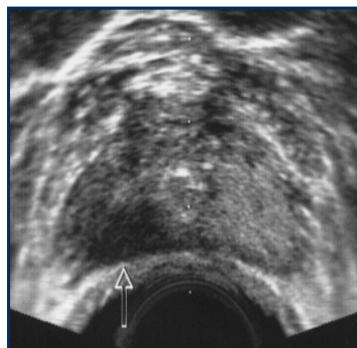
- Should I Be Screened?
- If I Undergo Screening and I Have Cancer, Should I Be Treated?
- If I Want To Be Treated, How Should I Be Treated?
- If I Am Treated, What Can I Expect?
  - *Cancer Cure*
  - *Side Effects*

## How Do You Screen for Prostate Cancer?

- History
  - Age
  - Family History
  - Ethnicity
  - Diet
  - Symptoms
- Digital Rectal Examination (optional)
- *Serum Prostate Specific Antigen (Confirmed)*

Transrectal Ultrasound  
Guided Biopsy

Suspicious  
→



## NCCN Guidelines - 2018

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- Continues to support early detection efforts in well – informed, healthy men
- Baseline testing at age 45
- Germline testing consistent with other NCCN guidelines
- Acknowledges that optimal screening of high risk patients not completely known
- Provides for alternatives to routine biopsy in men with elevated serum PSA levels
- Supports the use of active surveillance in men identified to have low risk cancers (linked to and complaint with treatment guidelines)

The NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) Prostate Cancer Early Detection (Version 1.2018). © 2018 National Comprehensive Cancer Network, Inc. Available at: NCCN.org

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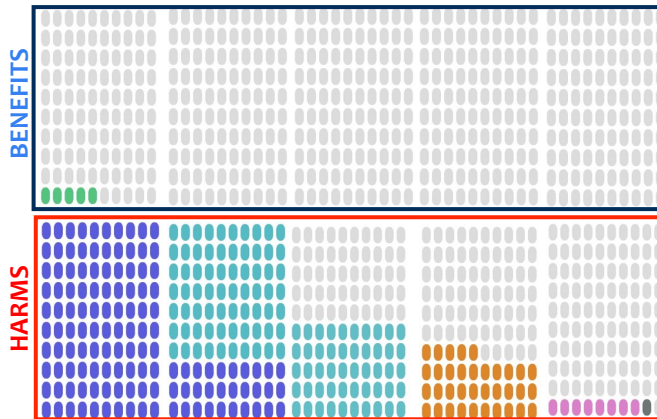
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PSA Testing

## **ADVERSE CONSEQUENCES**

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# PSA Screening in 1000 US Men



- Benefits**  
5 fewer Pca deaths
- Harms**  
130 negative biopsies  
120 positive biopsies  
35 develop bladder, bowel or sexual side effects  
8 complications of biopsy or treatment (i.e. sepsis, wound infection, DVT, MI, etc.)  
<1 death due to treatment

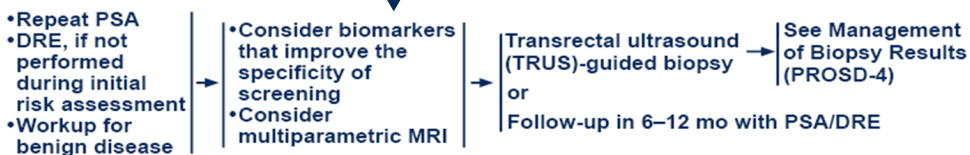


## NCCN Guidelines Version 1.2018 Prostate Cancer Early Detection

### INDICATIONS FOR BIOPSY

### MANAGEMENT

### Improve Specificity of Testing



- TRUS-GUIDED BIOPSY**
- Initial and Repeat
  - Extended-pattern biopsy (12 cores)
  - Number of cores:
    - Sextant (6),
    - Lateral peripheral zone (6), and
    - Lesion-directed at palpable nodule or suspicious image
  - Anteriorly directed biopsy is not supported in routine biopsy. However, the addition of a transition zone biopsy to an extended biopsy protocol may be considered in a repeat biopsy if PSA is persistently elevated.
  - Multiparametric MRI followed by lesion targeting may maximize the detection of higher-risk disease and limit the detection of lower-risk disease.
  - Local anesthesia can decrease pain/discomfort associated with prostate biopsy and should be offered to all patients.

PROSD-3

## New Tests of Specificity

Test	Source	Components
PHI	Serum	PSA, fPSA, -2proPSA
4Kscore	Serum	PSA, fPSA, intact PSA, kallikrein – related peptidase 2
ExoDx Prostate(IntelliScore)	Urine	ETS transcription factor, ERG, PCA3
Michigan Prostate Score	Urine	PCA3, PSA, TMPSS2:ERG
SelectMDx	Urine	mRNA DLX1, HOXC6
ConfirmMDx	Tissue	DNA methylation, GSTP1, APC, RASSF1

## mpMRI with Biomarkers - Consequences



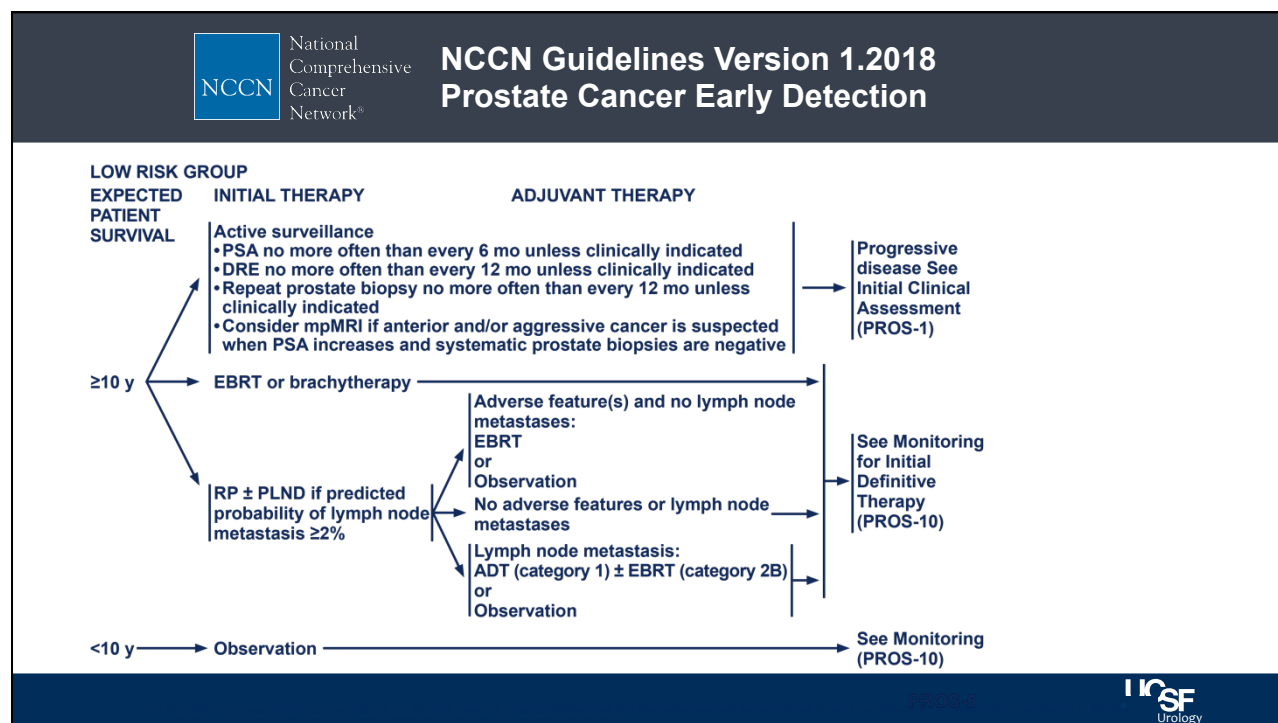
- By using new serum an urine biomarkers markers and/or mpMRI in those with an elevated serum PSA:
  - Decrease biopsy rates by 30% to 40%.
  - Still identify vast majority of higher risk cancers.
  - Decease biopsies in those with no cancer (“false positives”) and avoid detection of low risk cancers (which don’t need to be treated, but often are).

## Saving Early Detection

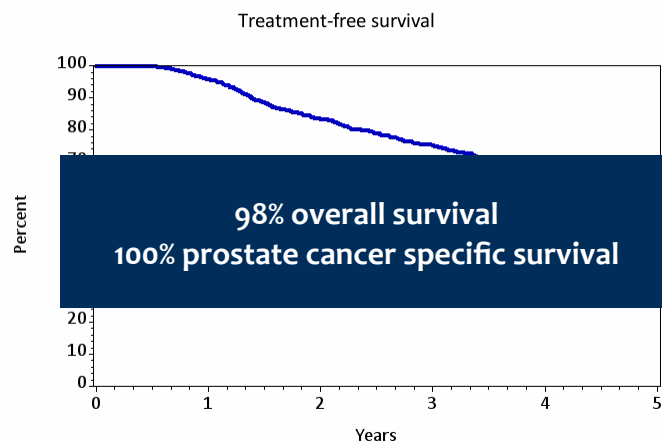
- Target population (45) 50 – 70 (75)
- Stop screening at low PSA/later age
- Increase screening intervals
- More stringent indications for biopsy
  - *Re – test*
  - *Healthy, well – informed patients*
  - *Increase specificity*
- **High use of active surveillance in low-risk patients**
- Use of higher volume centers/expertise for care

JAMA Oncol. Published online March 24, 2016. doi:10.1001/jamaoncol.2015.6275

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## Active Surveillance - UCSF

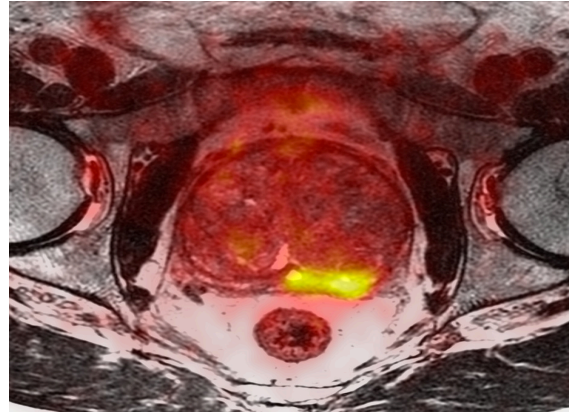
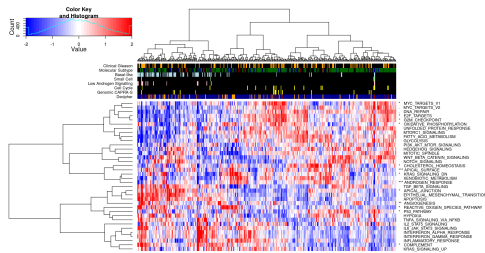


## If you are found to have prostate cancer

- Don't rush!
- Get educated
- Be sure testing/evaluation is complete
- Understand all your options (surgery, radiation, ablation, androgen deprivation, etc.)
- Do you need treatment?
- Get opinions from experienced people/centers
- Consider a support group
- A diagnosis may be a "teachable moment"

# Disruptors

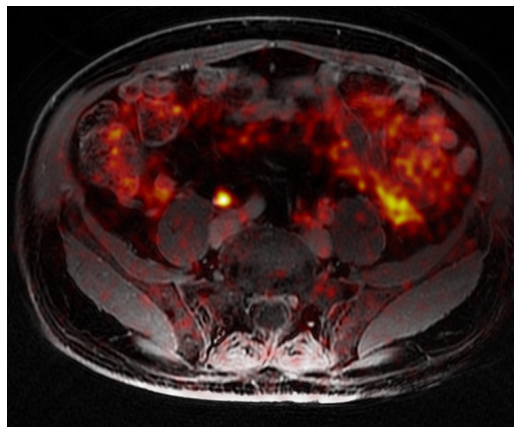
- Molecular Characterization and Novel Imaging



Courtesy of Matt Cooperberg, MD, MPH and Elai Davicioni, PhD



# PSMA PET



Movie Courtesy of Tom Hope, Department of Radiology





## Guidelines for a Healthy Diet

- Primarily a plant-based diet
- Low fat diet
- Limit simple sugars
- Adequate fluids

<http://urology.ucsf.edu/>

Access our patient education library online at [www.ucsfhealth.org](http://www.ucsfhealth.org)

### Your Health Matters

#### Nutrition & Prostate Cancer

Natalie Lederman, MS, RD  
Cancer Resource Center  
UCSF Comprehensive Cancer Center  
University of California, San Francisco

Scientific evidence suggests that differences in diet and lifestyle may account in large part for the variability of prostate cancer rates in different countries (1,2).

Good nutrition may reduce the incidence of prostate cancer and help reduce the risk of prostate cancer progression. There are many studies currently being conducted to help further understand how diet and prostate cancer are related. We do know, however, that improved nutrition reduces risk of heart disease, diabetes, and obesity, and usually improves overall quality of life. It is estimated that one-third of cancer deaths in the U.S. can be attributed to diet in adulthood, including diet's effect on obesity. Additionally, a healthy diet helps to increase energy levels, facilitate recovery, and enhance the immune system.

Recently, researchers conducted an 11-day study where men followed the Pritikin program. The Pritikin program focuses on a diet that is high in vegetables, fruits, whole grains, and very low in fat in combination with 60 minutes of daily exercise. Serum IGF-1 (insulin-like growth factor) decreased by 20% after following the program for 11 days. Higher IGF-1 values have been previously associated with higher risk for various cancers, including prostate cancer. This reduction in IGF-1 may be related to the lower serum insulin levels observed on a healthy low fat plant-based diet and regular exercise.

#### Guidelines for a Healthy Diet

- Primarily a plant-based diet
- Plenty of fruits and vegetables
- High fiber
- Low fat diet

UCSF Medical Center Physician Referral Service: 888/888-UCSF

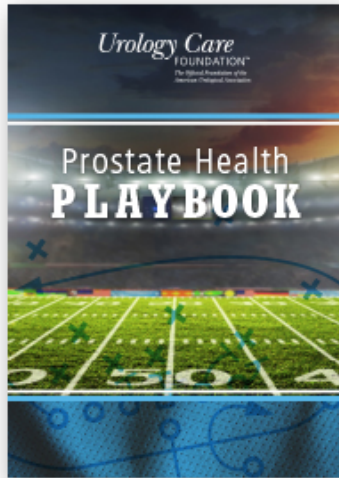
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## Take Home Message

- **Consider screening (PSA test) if you are in good health and certainly if you are higher risk (family history, ethnicity, etc.)**
- Start at age 50 in those who are at average risk of prostate cancer and are expected to live at least 10 more years.
- Strongly consider baseline PSA test at age 45 - 50.
- After this discussion, those men who want to be screened should be tested with the prostate-specific antigen (PSA) blood test. The digital rectal exam (DRE) may also be done as a part of screening, but is a secondary test
- Frequency of testing – one to 4 years
- If PSA elevated (and confirmed) may proceed to biopsy, but use of secondary tests becoming more common
- Don't rush, understand all options
- Get well informed, seek opinions, ask questions
- Lead a healthy life, eat well, exercise

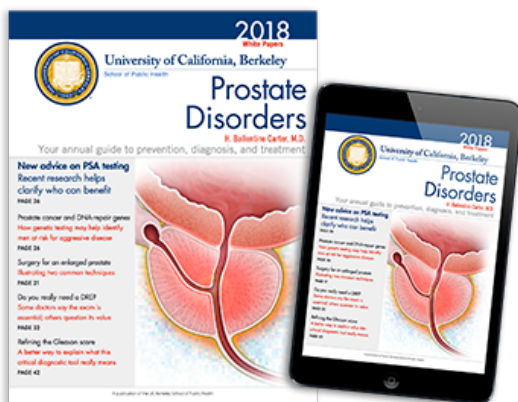
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## Resources



<https://www.urologyhealth.org/educational-materials/the-prostate-health-playbook-new>

## UC Berkeley – Prostate Disorders 2019



- [https://www.healthandwellnessalerts.berkeley.edu/bookstore/prostate\\_disorders/index.html](https://www.healthandwellnessalerts.berkeley.edu/bookstore/prostate_disorders/index.html)

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**THANK YOU!**