Prostate cancer screening

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The “stats”

- Estimated New Cases in 2017: 161,360
- % of All New Cancer Cases: 9.6%
- Estimated Deaths in 2017: 26,730
- % of All Cancer Deaths: 4.4%
- Percent Surviving 5 Years: 98.6%

Source: SEER.cancer.gov
The advent of PSA

Figure 1. Age-Adjusted Incidence of and Mortality from Prostate Cancer in the United States, 1975–2007.
Screening principles

- Disease should have a high incidence √
- Biological behavior and natural history of the disease should be known √
- Test should have high sensitivity, specificity, and positive predictive value ?
- Test should be rapid, inexpensive, noninvasive, and acceptable to patients √
- Acceptable and efficacious method of treatment must exist for patients diagnosed with disease √
- Screening should lower the disease-specific morbidity and increase survival ?
Screening tool- PSA

• Sensitivity to detect cancer 35-70%
• Specificity for cancer 60-90%
• The traditional PSA cut-off of 4.0 is no longer an absolute indication for biopsy
• Other factors that affect PSA:
  – Infection/Inflammation/Instrumentation
  – Urinary retention
  – Ejaculation/Vigorous massage
  – Advanced age/Benign enlargement
Risk factors

- Family history in multiple generations
- Family history of onset <55 years
- First degree relative dx <65 years old
- Known family BRCA mutation
- African American Race
Genomic tests

- **Whom to biopsy**
  - PSA
  - PHI
  - PCA3

- **When to re-biopsy**
  - ConfirmMDX
  - PCA3
  - PCMT
  - TMPRSS2-ERG
  - PTEN

- **Whom to treat or whom NOT to treat**
  - Oncotype DX
  - Prolaris
  - Decipher
  - CTCs
  - TMPRSS2-ERG
  - PTEN
Two Randomized Screening Trials

- **Prostate, Lung, Colorectal, and Ovarian (PLCO) Trial**
  - American age 55-74
  - Annual screening v usual care (which could include PSA)
  - 13 years of follow up no difference in mortality

- **European Randomized Study of Screening for Prostate Cancer (ERSPC)**
  - European 182,000 men age 50-74 years
  - Screening every 2-4 years; PSA cutoff 3
  - Mean follow-up of 9 years, results maintain at 11 year
  - Predefine subgroup <69yo, 20% reduction in Pca specific mortality, no OS difference
ERSPC Conclusions

• “20% decrease in disease-specific mortality”

• “1055 men would need to be invited to screen, with 2-3 PSA tests over 11 years of follow up to prevent 1 death resulting from prostate cancer”
  – 37 non-lethal cancers would be detected
ERSPC Trial in Practical Terms

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PSA accuracy and other harms

- False positive rate in the AHRQ systematic review –
  - 12.9% in PLCO
  - 12.5% in ERSPC RCT
- Biopsy (1% of less)
  - Infection (increasing trends)
  - Bleeding
  - Urinary difficulty 1.9%
- Anxiety
- Treatment complications
Age 55-69 AUA

• Shared decision making must be documented

• Considerations:
  – There is no “normal” PSA value
  – BPH
  – Lower Urinary Tract Symptoms

• **USPTF** – Age 55-69 Shared Decision; 70+ no screening
• **ACS** – Age >50 conversations around screening
• **AUA** – Age 55 – 69, Discuss with MD; 70+ no screening
Practical Guide

• **Default:** Don’t screen

• **Determine baseline risk for prostate cancer**
  – Race African American > White > Asian
  – Family history of PCa in first degree relatives < 65

• **Determine if expected Life Expectancy is >10 years**
  – Self-reported health status
  – Comorbidity

• **Discuss follow-up for positive test with patients up-front**
  – Biopsy
  – Treatments: surgery, XRT, androgen deprivation, surveillance
  – Treatment consequences

• **Assess values and preferences**
Resources

• American Cancer Society: “Should I be tested? Is this the right choice for me?

• CDC Prostate cancer screening
  – www.cdc.gov/cancer/prsotate/basic_info/screening.htm

• Healthwise

• Mayo Clinic
  – www.mayoclinic.com/health/prostate-cancer/HQ01273

• Sunnybrook Nomogram www.prostaterisk.ca