Prostate Cancer

Men at High Risk

> Less than 70 years
  > More than 10 year life expectancy
  > (prostate cancers grow slowly, take years to grow dangerous;)
> Family – Genetic History of prostate cancer
> Black gentlemen
> Prostate nodule or asymmetry on digital rectal exam
> PSA progression faster, higher than expected
> PSA increasing in men on Avodart, Proscar or Testosterone
> PSA more than 10
> PSAD more than 0.15
> Abnormal Prostate Cancer Biomarkers/Predictor Tables
> Previous biopsy showing pre cancerous cells
> MRI Score 4,5, nodule ≥ 0.5 cc

MRI
image based prostate cancer management
accurate diagnosis, treatment and monitoring
(Learn more, pamphlets 4 and 5)

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Diagnosing Prostate Cancer

PSA to Prostate MRI

for patients and curious doctors

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**PSA Prostate Specific Antigen**

**PSA for diagnosis**

predicts prostate cancer

- PSA may indicate benign prostate hypertrophy (BPH), urine infection, urine retention, instrumentation or cancer
- Prostates _grow_ bigger with age (BPH) PSA usually ↑ with age
- Obtain Baseline PSA age 30, men at high risk
  - age 40, men with concern
- Prostate cancers usually produce more PSA than BPH
- PSA _progression_ is faster, higher with aggressive cancers
  - A more accurate predictor than PSA alone
- **PSA** • 4 ng/ml upper limit of normal is _incorrect_
  - less than 4 ng/ml aggressive significant cancers may be present
  - over 4 ng/ml mostly caused by BPH

When used carefully and with PSA progression and PSA density PSA is a good inexpensive available diagnostic cancer predictor

**PSA Density (PSAD)**

*PSAD is doubly better than PSA as a cancer predictor*

- PSAD is the ratio of PSA to prostate volume
- \[ \text{PSAD} = \frac{\text{PSA}}{\text{prostate volume}} \]
  - PSA 6.2 ng/ml
  - vol 77 cc
  - = 0.08 (normal)

(Prostate volume obtained from Trans Rectal Ultrasound or MRI)

- Cancer unlikely PSAD - _less than 0.10_
- Borderline PSAD - _0.10 to 0.15_
- Cancer likely PSAD - _greater than 0.15_ (suggest prostate cancer)

**PSA after treatment**

A accurate, reliable, biomarker monitoring for residual or recurrent prostate cancer.

**Prostate MRI**

Identifies prostate cancer 90% accurate

- Identifies cancer nodule(s), size and location
- Predicts degree of malignancy (Gleason Grade)
- Stages local extension of the cancer

Requires high quality MRIs and experienced radiologist

Prostate MRI T2w image

Courtesy of Dr. M. Emberton

Prostate cancer Risk Assessment selects men for MRI
MRI selects men for biopsy

52 years, PSA 1.1 → 4.7 over 3 years, PSAD 0.12
DRE: no nodule
TRUS/MRI Targeted Biopsy
Gleason grade 8