

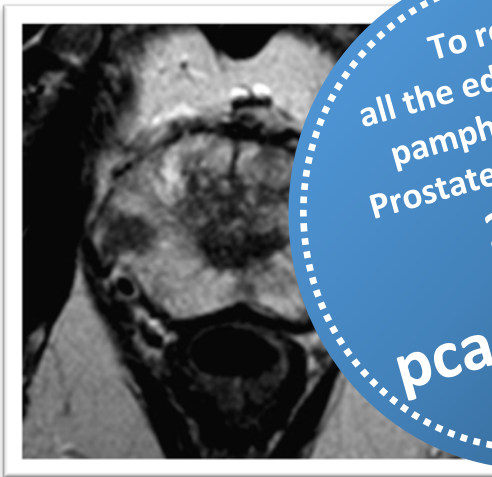
an educational pamphlet from

3

Prostate Cancer MRI

Accurate Diagnosis and Treatment

Diagnosing Prostate Cancer



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Prostate Cancer MRI
2016
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PSA to Prostate MRI

for patients and curious doctors

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Armen Aprikian, M.D. & Marc Emberton, M.D. Forewords

PSA (Prostate Specific Antigen) biomarker

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
- > PSA **Trend**, progression is faster, higher with aggressive cancers
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 trend
PSA is a **good** inexpensive available widely used
cancer predictor

PSA Density (PSAD)

PSAD is doubly better than PSA as a cancer predictor

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

(Prostate volume obtained from Trans Rectal Ultrasound and MRI)
- > Prostate cancers usually produce more PSA than BPH
 - **Normal** PSAD - **less than 0.10**
 - **Borderline** PSAD - **0.10 to 0.15**
 - **Abnormal** PSAD - **greater than 0.15**

Prostate MRI

Identifies prostate cancer

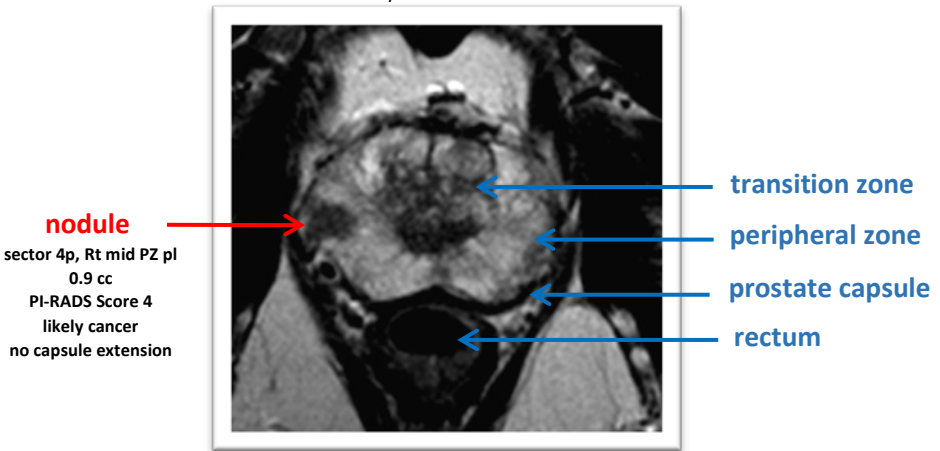
94 % accurate

(with precise image acquisition and experienced radiologist)

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

Prostate MRI T2w image

Courtesy of Dr. M. Emberton



nodule

sector 4p, Rt mid PZ pl
0.9 cc
PI-RADS Score 4
likely cancer
no capsule extension

transition zone

peripheral zone

prostate capsule

rectum

52 years, PSA 1.1 → 4.7 over 3 years, PSAD 0.12

DRE- no nodule

TRUS/MRI Targeted Biopsy

Gleason grade 8

Prostate Cancer Risk Assessment

selects men for MRI

MRI selects men for biopsy

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** on digital rectal exam
- > PSA **Trend**, progression faster, higher than expected
- > PSA increases in men on Avodart, Proscar, Testosterone
- > PSA more than **10**
- > PSAD more than **0.15**
- > **Abnormal** Prostate Cancer Biomarkers/Predictor Tables
- > **Previous** MRI, biopsy or diagnosis of prostate cancer
- > **MRI** PI-RADS Score 4,5, nodule ≥ 0.5 cc

MRI image based **prostate cancer** **accurate diagnosis and treatment**

(Learn more, pamphlets 3, 4 and 5)

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