

an educational pamphlet from

4

Prostate Cancer MRI

Accurate Diagnosis and Treatment

Important Details to Know About 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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Prostate Cancers

Not-Aggressive In-Between Aggressive

indolent, insignificant, low risk
low grade, non invasive

biologically active, significant, high risk
high grade, invasive

Most Prostate Cancers are Not-Aggressive

- > Common, very slow growing, causes no illness or symptoms
- > PSA slow progression, PSA density < 0.10
- > Men with **Not-Aggressive** cancers die from other causes
- > Biopsy Gleason grades 6, 7 (3+4) small volume
- > **Not visualized on MRI**

In-Between

- > Rate of cancer growth varies
- > PSA rate of progression varies
- > PSA density 0.10-0.15
- > Biopsy Gleason 7 (3+4) small volumes
- > Sometimes visible on MRI, cancer nodule less than 0.2 cc

Some Prostate Cancers are Aggressive

- > Less frequent, grow faster, can cause serious illness and death
- > PSA has rapid progression, PSA density greater than 0.15
- > Index cancer nodule **visualized on MRI**
- > Biopsy Gleason grades 7 (4+3), 8, 9, 10

PSA

For Diagnosis

no assigned normal limits

- 4 ng/ml upper limit of normal incorrect
- The higher the PSA value the greater likelihood of cancer
- Less than 4 ng/ml Aggressive cancers can be present
- Over 4 ng/ml mostly BPH caused
- **PSA Density, PSA Progression better cancer predictors**

After treatment

PSA is a sensitive, reliable biomarker for monitoring

Prostate MRI

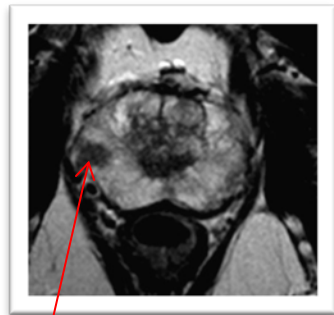
Identifies:

- > Cancer nodule(s), location and volume
- > Stages local extension of the cancer

Predicts Likelihood of Cancer

The 3 parameters **score**
(T2w, DWI/ADC, DCE)

1. Highly likely **no** cancer
2. Likely **no** cancer
3. Unsure
4. Likely cancer
5. Highly likely cancer



Cancer Nodule

Courtesy of Dr M. Emberton

MRI selects patients to biopsy, targets where to biopsy

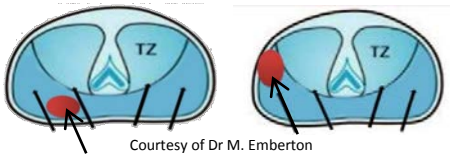
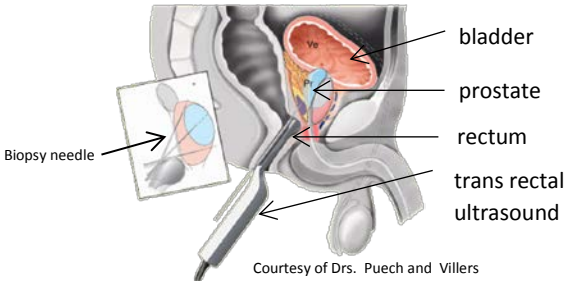
Index Cancer Nodule

the nodule with the greatest **potential** for causing illness

- The **most** aggressive cancer nodule in the prostate.
- Usually ≥ 0.5 cc, with the highest MRI score or involves the prostate capsule.
- Has the biologic potential to grow larger, faster and spread beyond the prostate.

Prostate Biopsy

- obtains tissue for examination
- the proof of the presence of cancer



Gleason grade

The biologic potential of prostate cancer cells to grow, spread and cause illness. Determined by the pathologist microscopic examination of prostate tissue.

- | | |
|----------------|---|
| Grade 6 | Not-Aggressive (little or no potential) |
| 7 | Moderately Aggressive (low to moderate potential) |
| 8,9,10 | Aggressive (high potential) |

Prostate Cancer Staging

higher the stage, worst the outlook

Local Staging – local extension of the cancer

MRI

- 1 > Cancer nodule • confined **inside** the prostate ≤ 0.2 cc
• confined **inside** the prostate ≥ 0.5 cc
- 2 > Cancer nodule involves prostate capsule
- 3 > Limited local cancer **spread** - adjacent, seminal vesicles
- 4 > Cancer **spread** involves bladder, rectum, nodes, bones

PET/CT

Distance Staging – extension of the cancer to spine and upper nodes

Bone Scan

CT Scan Abdomen

PET/CT

Risk of Prostate Cancer Causing Illness

depends on:

- Patient's General Health, Age, Life Expectancy
- PSA progression, density
- MRI Score (1,2,3,4,5)
- *Biopsy Gleason Grade*
- Local Staging
- Biomarkers
- MRI Nodule size, location
- Biopsy cancer volume
- Distance Staging

References

Wein, A. J. et al., Campbell-Walsh Urology 11th Edition (2016) Elsevier.

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