Important Details to Know About Prostate Cancer

PSA to Prostate MRI

for patients and curious doctors

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**Prostate Cancers**

**Not-Aggressive**  In-Between  **Aggressive**

<table>
<thead>
<tr>
<th>Not-Aggressive</th>
<th>In-Between</th>
<th>Aggressive</th>
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<tbody>
<tr>
<td>indolent, insignificant, low risk</td>
<td>low grade, non invasive</td>
<td>biologically active, significant, high risk</td>
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<td>PSA slow progression, PSA density &lt; 0.10</td>
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<td>Index cancer nodule visualized on MRI</td>
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**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

**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

**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

**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
2. Cancer nodule 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**

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**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

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**References**


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Design by Annie Desjardins
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