

an educational pamphlet from

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Prostate Cancer MRI

Accurate Diagnosis and Treatment

Classifying Prostate Cancer



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PSA to Prostate MRI

for patients and curious doctors

Samuel Aronson, M.D.

Serge Carrier, M.D.

Franck Bladou, M.D.

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

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 less than 0.10
- > Men with **Not-Aggressive** cancers die from other illnesses
- > Most are biopsy Gleason grade 6
- > **Not visualized on MRI**

In-Between

- > Rate of cancer growth varies
- > PSA rates 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 rapid progression, PSA density greater than 0.15
- > Cancer nodule(s) **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

Criteria and Classifications

Prostate MRI

Identifies: Cancer nodule (s), location and volume

Predicts: Likelihood of Cancer, 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

Local cancer staging:

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

Gleason grade (potential for causing illness)

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

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

TNM Staging

Developed before prostate MRI

Describes the size of the prostate cancer, where it has spread

T Digital Rectal Exam (DRE) finger exam of prostate

- T1 cancer cannot be felt
T2 cancer nodule confined to the prostate gland
T3,T4 cancer nodule has grown outside the prostate

N Cancer spread to lymph nodes

- N1 a small cancer in a lymph node
N2 a medium cancer in one node
or several small cancers in several lymph nodes
N3 a large cancer in one or more lymph nodes

M Cancer spread beyond lymph nodes

- M1a adjacent to the nodes
M1b into the bones
M1c to other parts of the body

D'Amico Risk Classification

Developed before prostate MRI

	Low risk (favourable)	Intermediate risk	High risk (unfavourable)
PSA	< 10 ng/mL	10-20 ng/mL	> 20 ng/mL
TNM stage	T1-T2	T2	T3
Gleason Score	6	7	8, 9, 10

Epstein's Criteria for Not-Aggressive (Insignificant) Cancers

Developed before prostate MRI

- > PSA \leq 10 PSA density \leq 0.15
- > Biopsy Cores – Fewer than 3 positives cores
Each core less than 50 % cancer per core
- > Gleason Grade 6
- > No Gleason grade 4 or 5
- > Cancer confined inside prostate
- > Cancer nodule volume $<$ 0.2 cc

Risk Of Prostate Cancer Causing Illness

Low risk

Not-Aggressive, MRI score 1-2, Gleason 6, nodule volume \leq 0.2 cc, confined inside prostate

Moderate risk

In-Between, MRI score 3, biopsy tissue Gleason 7 (3+4), volume \leq 0.5 cc, confined inside prostate

High risk

Aggressive, MRI score 4-5, Gleason 7(4+3) 8,9,10 volume \geq 0.5 cc, may involve capsule, neurovascular bundle, spread locally, adjacent, seminal vesicles, nodes or bones

References

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SAMUEL ARONSON, M.D.

Assistant Professor of Urology, McGill University

Jewish General Hospital

3755 Côte Ste-Catherine Rd, E-959
Montreal (Quebec) H3T 1E2
Phone: 514 340-7558
Fax: 514 340-7559

SERGE CARRIER, M.D.

Associate Professor of Urology, McGill University

MUHC – Glen Site

1001 Decarie Blvd., DS1-3310
Montreal (Quebec) H4A 3J1
Phone: 514 934-1934 ext. 34356
Fax: 514 843-1552

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