

This presentation shows how significant prostate cancers can be detected using multi-parametric MRI with PIRADS v2 assessment (<http://www.esur.org/esur-guidelines/prostate-mri/>).

Specifically the differences between PIRADS v1 (Barentsz et al European Radiology 2012) and PIRADS v2 are:

In the **technical part** a few minor modifications were made:

1. In DWI it is, in order to decrease the vascular effect, now recommended not to use b-0.
2. The use of high b-value images (>1400) is mandatory. These images can either be acquired or calculated.

For the **PI-RADS assessment** the following changes are made:

3. For the interpretation: DCE-MRI is now a 2 point scale: “-” or “+”, instead of a 5 point scale:

Score	PI-RADS Assessment for DCE for Peripheral Zone (PZ) or Transition Zone (TZ)
(-)	no early enhancement, or diffuse enhancement not corresponding to a focal finding on T2 and/or DWI, or focal enhancement corresponding to a lesion demonstrating features of BPH on T2WI
(+)	focal, and; earlier than or contemporaneously with enhancement of adjacent normal prostatic tissues, and; corresponds to suspicious finding on T2W and/or DWI

4. There are minor changes in the description for T2W and DWI (see tables below). The most important change is, that a size criterion (smaller or larger than 1.5 cm) as well as the invasive behavior are now included for the interpretation of PIRADS 4 versus 5.

Score	PI-RADS Assessment for T2W for Peripheral Zone (PZ)
1	Uniform hyperintense signal intensity (normal)
2	Linear or wedge-shaped hypointensity or diffuse mild hypointensity, usually indistinct margin
3	Heterogeneous signal intensity or non-circumscribed, rounded, moderate hypointensity Includes others that do not qualify as 2, 4, or 5
4	Circumscribed, homogenous moderate hypointense focus/mass confined to prostate and <1.5 cm in greatest dimension
5	Same as 4 but ≥ 1.5 cm in greatest dimension or definite extraprostatic extension/invasive behavior

Score	PI-RADS Assessment for T2W for Transition Zone (TZ)
1	Homogeneous intermediate signal intensity (normal)
2	Circumscribed hypointense or heterogeneous encapsulated nodule(s) (BPH)
3	Heterogeneous signal intensity with obscured margins Includes others that do not qualify as 2, 4, or 5
4	Lenticular or non-circumscribed, homogeneous, moderately hypointense, and <1.5 cm in greatest dimension
5	Same as 4, but ≥ 1.5 cm in greatest dimension or definite extraprostatic extension/invasive behavior

Score	PI-RADS Assessment for DWI for Peripheral Zone (PZ) or Transition Zone (TZ)
1	No abnormality (i.e. normal) on ADC and high b-value DWI
2	Indistinct hypointense on ADC
3	Focal mildly/moderately hypointense on ADC and isointense/mildly hyperintense on high b-value DWI.
4	Focal markedly hypointense on ADC and markedly hyperintense on high b-value DWI; <1.5cm in greatest dimension
5	Same as 4 but ≥1.5cm in greatest dimension or definite extraprostatic extension/invasive behavior

5. For the PI-RADS overall assessment instead of a “Sum-score” the “Dominant sequence score” should be used:

- for the Peripheral Zone the DWI sequence is dominant, and
- for the Transition Zone the T2W sequences are dominant (see tables below).

PI-RADS Assessment

Peripheral Zone (PZ)

DWI	T2W	DCE	PIRADS
1	Any*	Any	1
2	Any	Any	2
3	Any	-	3
		+	4
4	Any	Any	4
5	Any	Any	5

* “Any” indicates 1-5

Transition Zone (TZ)

T2W	DWI	DCE	PIRADS
1	Any	Any	1
2	Any	Any	2
3	≤4	Any	3
	5	Any	4
4	Any	Any	4
5	Any	Any	5

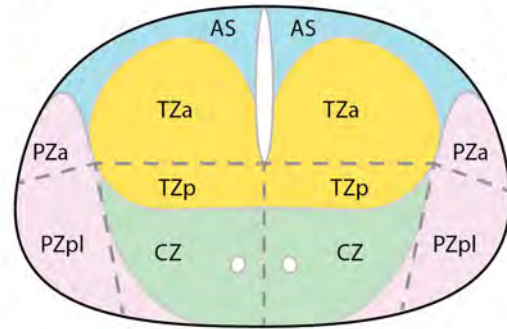
6. For scoring recommendations are provided concerning description of number of lesions, measurement of lesion (a-p x l-r x c-c x 0.53) and lesion location. The use of a 39-sector scheme is recommended. In this scheme the peri-urethral tissue and the Central Zone (CZ) are added compared to the PI-RADS version 1 scheme (see below).

- PZ 
- CZ 
- TZ 
- US 
- AFS 

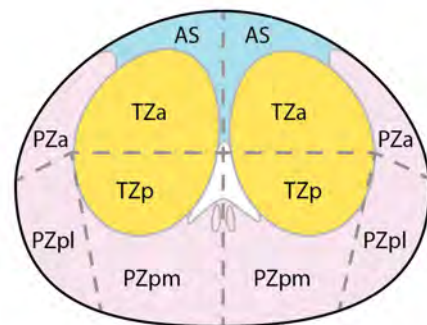


Seminal Vesicles

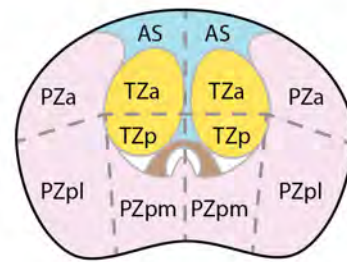
R L



Base



Mid



Apex



Urethra

