

MRI-Targeted Biopsy and Accuracy with Radical Prostatectomy Specimens: A Grading Issue

Myky Nguyen¹, Oualid Mouhaoui¹, Marie Van Eycken², Hamid El Kaddouri¹, Thierry Roumeguere¹, Alexandre Peltier¹, Romain Diamand¹
HUB Erasme / Institut Jules Bordet



Introduction

- Grading PCa accurately is critical for patient management.
- The **ISUP 2019** recommendations propose a global grade approach for MRI-targeted biopsies vs. the highest score in the **2014 ISUP** grading.
- MRI-targeted biopsies improve csPCa detection but risk upgrading due to sampling bias.
- Accurate correlation with final pathology from RP is essential to guide treatment and prevent overtreatment.



Objective

To evaluate grading concordance between MRI-targeted/systematic biopsy and RP specimens using 2014 vs. 2019 ISUP guidelines, and to identify predictors of upgrading.



Methods

- Design:** retrospective cohort study

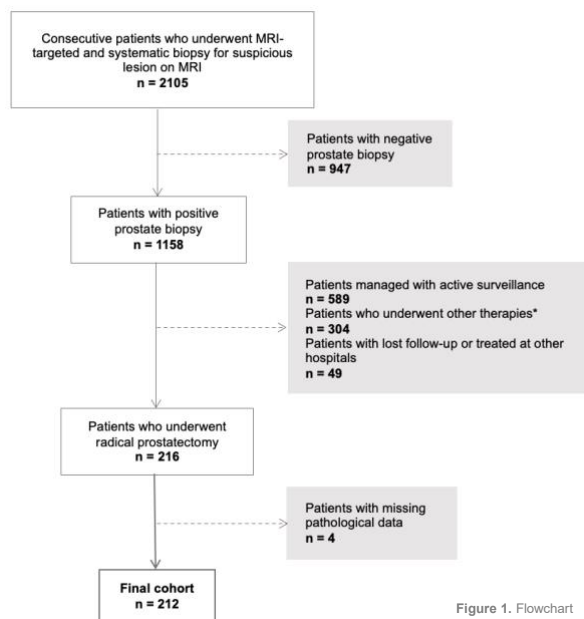


Figure 1. Flowchart

- Analysis:**
 - Concordance rates (McNemar's test, Weighted k)
 - Multivariable logistic regression
 - CHAID decision tree
- Grading Criteria Comparison:**
 - 2014:** Highest ISUP grade core
 - 2019:** Global ISUP from targeted + perilesional cores



Results

Patient Characteristics:

- Median age: **66 years**
- Median PSA: **7,6 ng/mL**
- Median csPCa cores: **4**

Predictors of Upgrading:

- PSA:** OR 1.11 ($p = 0,001$)
- Number of csPCa Cores:** OR 0,67 ($p < 0,001$)

		2014 ISUP	2019 ISUP	Difference (CI) (2019-2014)	p-value (2014 vs 2019)
MRI-targeted and systematic biopsy	Upgrading, n (%)	27 (13)	33 (16)	0.03 (0.0008, 0.06)	0.03
	Concordance, n (%)	110 (52)	127 (60)	0.08 (0.02, 0.14)	0.002
	Downgrading, n (%)	75 (35)	52 (25)	-0.11 (-0.16, -0.06)	<0.001

Table 1. Accuracy of ISUP grade group assignment between biopsy and radical prostatectomy specimens according to the 2014 and 2019 ISUP recommendations.

ISUP 2019 recommendations reduced downgrading by 11% ($p < 0,001$) and improved accuracy by 8% ($p = 0,002$).

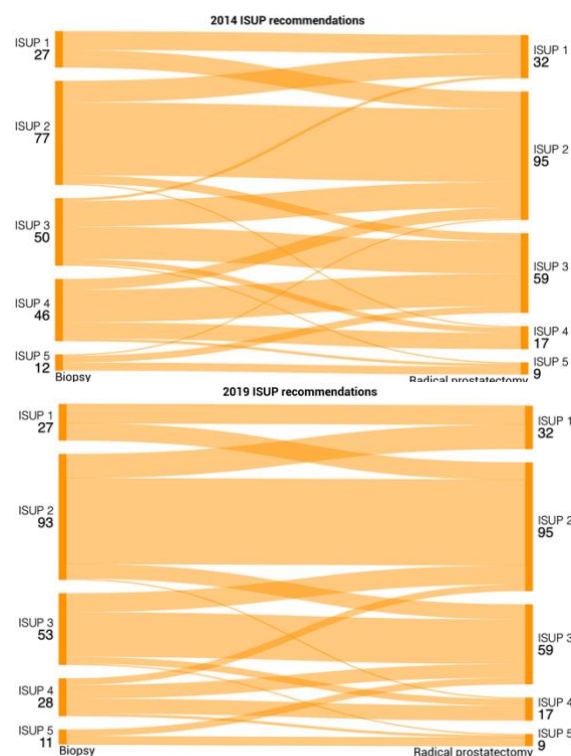


Figure 2. Sankey diagram illustrating the ISUP grade group distribution between MRI-targeted and systematic biopsies

CHAID analysis:

- Patients with ≤ 4 csPCa cores: 20% upgrading
- ≥ 4 csPCa cores: 8,2% upgrading

CONCLUSION

- ✓ The ISUP 2019 recommendations **significantly enhance grading accuracy** and reduce overtreatment risk.
- ✓ **Number of csPCa cores** is a robust predictor of upgrade and should inform treatment decisions.
- ✓ This strategy supports a **more nuanced and personalized approach** to PCa risk stratification.