

Supplementary Figure 1. All patients undergoing confirmatory MRI-Biopsy (consisting of both a targeted biopsy [TB] and zonal systematic biopsy [SB]). Bar graph demonstrates among confirmatory MRI-biopsies showing cancer, what proportion had only positive SB cores, only positive TB cores, or had both positive SB and TB cores. The pie chart demonstrates among the cases with positive SB and TB cores, what fraction had a higher Grade Group (GG) in the SB cores, in the TB cores, or that had the same GG in the SB and TB cores.

Supplementary Figure 2. Confirmatory MRI-biopsy grade group based on MRI score (3-5) for patients undergoing MRI (A) prior to matching and (B) after matching. GG=grade group

Supplementary table 1. Baseline characteristics prior to matching

Variable		Systematic confirmatory biopsy (n=691)	MRI confirmatory biopsy* (n=335)	p-value
Clinical Characteristics	Median age, years (IQR)	64 (58-70)	64 (58-68)	0.3
	Race, n (%)			0.2
	White	571 (82.6)	260 (77.6)	
	Black	54 (7.8)	33 (9.9)	
	Other	66 (9.6)	42 (12.5)	
	Clinical T stage, n (%)			<0.001
	T1-T2a	681 (98.6)	310 (92.5)	
	T2b-T2c	8 (1.2)	7 (2.1)	
	Unknown	2 (0.3)	18 (5.4)	
	Median PSA prior to biopsy, ng/mL (IQR)	4.1 (2.7-5.8)	5.7 (4.3-8)	<0.001
	Median prostate volume, cm ³ (IQR)	38.1 (28.5-50.7)	41 (32-55)	0.004
	Median PSA density, (IQR)	0.1 (0.06-0.15)	0.14 (0.9-0.2)	<0.001
Initial Biopsy Characteristics	Median number of cores, (IQR)	12 (12-12)	12 (12-12)	0.02
	Median total tumor length, mm (IQR)	1.5 (0.5-3)	4 (2-7)	<0.001
	Median maximum single core length, mm (IQR)	1 (0.5-2.5)	2.5 (1-4)	<0.001
	Median number positive cores, (IQR)	1 (1-2)	2 (1-3)	<0.001
	Grade Group, n (%)			0.001
	1	582 (84.2)	252 (74.22)	
	2	96 (13.9)	77 (23.0)	
	3	13 (1.9)	5 (1.5)	
	4-5	0	1 (0.3)	
	Risk Group, n (%)			<0.001
	Low	549 (79.5)	215 (64.2)	
	Intermediate - Favorable	122 (18.7)	95 (28.4)	
Intermediate - Unfavorable	17 (2.5)	15 (4.5)		
High	0	1 (0.3)		
Unknown	3 (0.4)	9 (2.7)		
Confirmatory Biopsy Characteristics	Median number of cores, (IQR)	11 (11-11)	13 (12-14)	<0.001
	Median total tumor length, mm (IQR)	3 (1.5-7)	13 (4.5-22)	<0.001
	Median maximum single core length, mm (IQR)	2 (1-4)	6 (3-9)	<0.001
	Median number positive cores, (IQR)	2 (1-3)	3 (1-5)	<0.001
	Grade Group, n (%)			<0.001
	Benign	324 (46.9)	36 (10.8)	
	1	208 (30.1)	98 (29.3)	
	2	123 (17.8)	133 (39.7)	
	3	27 (3.9)	42 (12.5)	
	4-5	9 (1.3)	26 (7.8)	
	Risk Group (excluding benign biopsies), n (%)			<0.001
	Low	195 (53.1)	93 (31.1)	
	Intermediate - Favorable	129 (35.2)	117 (39.1)	
	Intermediate - Unfavorable	34 (9.3)	58 (19.4)	
High	9 (2.5)	21 (7)		
Unknown	0	10 (3.3)		
Risk Group Change, n (%)			<0.001	
Increase	103 (14.9)	149 (44.5)		

Decrease	347 (50.2)	56 (16.7)
Equal to initial risk group	238 (34.4)	120 (35.8)

IQR = interquartile range

*MRI-biopsy consisted of MRI-targeted biopsies and systematic biopsies

Supplementary Table 2. Multivariable logistic regression for upgrading using total cohort.

<i>Any upgrading</i>	OR	95% CI	p-value
Confirmatory Biopsy cohort			
Systematic biopsy	Ref		
MRI-biopsy	4.56	3.10-6.70	<0.001
Age	1.04	1.02-1.06	0.001
PSA density	2.56	1.81-3.62	<0.001
Initial biopsy GG			
GG1	Ref		
GG2	0.24	0.14-0.40	<0.001
GG3	0.05	0.006-0.42	0.006
Initial PSA	0.98	0.95-1.05	0.9
Number of initial biopsy positive cores	1.00	0.87-1.15	0.99
Initial maximum single core tumor length	1.07	0.98-1.18	0.2
Confirmatory biopsy total number of cores	0.98	0.91-1.06	0.7
<i>Grade increase from GG1 to ≥GG2</i>	OR	95% CI	p-value
Confirmatory Biopsy cohort			
Systematic biopsy	Ref		
MRI-biopsy	2.98	1.85-4.78	<0.001
Age	1.04	1.02-1.07	0.002
PSA density	2.59	1.67-4.01	<0.001
Initial PSA	0.99	0.92-1.07	0.8
Number of initial biopsy positive cores	0.90	0.74-1.08	0.3
Initial maximum single core tumor length	1.07	0.95-1.21	0.3
Confirmatory biopsy total number of cores	0.97	0.88-1.07	0.5
<i>Grade increase from GG1 to ≥GG3</i>	OR	95% CI	p-value
Confirmatory Biopsy cohort			
Systematic biopsy	Ref		
MRI-biopsy	4.52	2.42-8.43	<0.001
Age	1.08	1.04-1.12	<0.001
PSA density	4.21	2.63-6.76	<0.001
Confirmatory biopsy total number of cores	0.98	0.89-1.09	0.7
<i>Grade increase from GG1-2 to ≥GG3</i>	OR	95% CI	p-value
Confirmatory Biopsy cohort			
Systematic biopsy	Ref		
MRI-biopsy	4.82	2.78-8.35	<0.001
Age	1.08	1.04-1.11	<0.001
PSA density	3.86	2.29-6.50	<0.001
Initial PSA	0.98	0.93-1.03	0.4
Number of initial biopsy positive cores	0.93	0.76-1.13	0.5
Initial maximum single core tumor length	0.93	0.81-1.07	0.3
Confirmatory biopsy total number of cores	0.99	0.91-1.08	0.9

GG=grade group, OR=odds ratio, CI = confidence interval

*MRI-biopsy consisted of MRI-targeted biopsies and systematic biopsies



