

(1) 針生検；

- (a) コア生検：比較的太い針を使って、病変部の組織のサンプルを切り採ります。針が太いため、一般に痛み止めの局所麻酔が行われます。
- (b) 穿刺吸引（せんしきゅういん）生検：病変部に細い針を刺して、注射器で吸い出した細胞をサンプルにします。多くの場合、麻酔は不要です。「FNA[fine needle aspiration]バイオプシー」ともいわれます。

(2) 外科的生検；一般に局所麻酔下の小手術で行われます。

- (a) 切開（せっかい）生検：病変部を切開して、組織の一部を採取します。
- (b) 摘出（てきしゅつ）生検：病変である“しこり”や疑わしい領域の全体を摘出してサンプルにする方法です。

(3) 内視鏡下生検；

内視鏡でみながら行う生検で、内視鏡に通した細い鉗子（かんし；小さなハサミのようなもの）で病変の一部をつまみ採ります。

前立腺の場合はコア生検です。

■表1 T2強調像のスコア (辺縁領域)

スコア1	均一な高信号 (正常)
スコア2	線状あるいは楔状の低信号, またはびまん性の中等度の低信号 (通常は境界不明瞭)
スコア3	不均一な信号域, または輪郭のない円形の中等度低信号域, または2, 4, 5以外
スコア4	前立腺内に限局する最大径1.5cm未満の輪郭のある均一な中等度低信号域/腫瘍
スコア5	4と同じで最大径1.5cm以上のもの, または明らかな前立腺外進展・浸潤傾向を呈するもの

■表2 T2強調像のスコア (移行領域)

スコア1	均一な中等度信号 (正常)
スコア2	輪郭のある低信号域, または被膜のある不均一な結節 (BPH)
スコア3	境界不明瞭な不均一な信号域, または2, 4, 5以外
スコア4	レンズ状あるいは輪郭不明瞭で, 均一な中等度低信号域で最大径1.5cm未満のもの
スコア5	4と同じで最大径1.5cm以上のもの, または明らかな前立腺外進展・浸潤傾向を呈するもの

MRIの悪性度所見のスコア化です。一般に前立腺肥大(BPH)は移行領域に発生します。

Table 1. Characteristics of the Participants at Baseline.*

Characteristic	MRI-Targeted Biopsy Group (N = 252)	Standard-Biopsy Group (N = 248)
Age — yr	64.4±7.5	64.5±8.0
PSA level — ng/ml		
Median	6.75	6.50
Interquartile range	5.16–9.35	5.14–8.65
Family history of prostate cancer — no. (%)	48 (19)	40 (16)
Abnormal digital rectal examination — no. (%)	36 (14)	38 (15)

Table 2. Comparison of Cancer Detection between Groups.*

Outcome	MRI-Targeted Biopsy Group (N=252)	Standard-Biopsy Group (N=248)	Difference†	P Value
Biopsy outcome — no. (%)			—	—
No biopsy because of negative result on MRI	71 (28)	0		
Benign tissue	52 (21)	98 (40)		
Atypical small acinar proliferation	0	5 (2)		
High-grade prostatic intraepithelial neoplasia	4 (2)	10 (4)		
Gleason score				
3+3	23 (9)	55 (22)		
3+4	52 (21)	35 (14)		
3+5	2 (1)	1 (<1)		
4+3	18 (7)	19 (8)		
4+4	13 (5)	6 (2)		
4+5	7 (3)	2 (1)		
5+5	3 (1)	1 (<1)		
No biopsy‡	4 (2)	3 (1)		
Withdrawal from trial§	3 (1)	13 (5)		
Clinically significant cancer¶				
Intention-to-treat analysis — no. (%)	95 (38)	64 (26)	12 (4 to 20)	0.005
Modified intention-to-treat analysis — no./total no. (%)	95/245 (39)	64/235 (27)	12 (3 to 20)	0.007
Per-protocol analysis — no./total no. (%)	92/235 (39)	62/227 (27)	12 (3 to 20)	0.007
Clinically insignificant cancer — no. (%)	23 (9)	55 (22)	-13 (-19 to -7)	<0.001
Maximum cancer core length — mm	7.8±4.1	6.5±4.5	1.0 (0.0 to 2.1)	0.053
Core positive for cancer — no./total no. of cores (%)	422/967 (44)	515/2788 (18)	—	—
Men who did not undergo biopsy — no. (%)	78 (31)	16 (6)	—	—

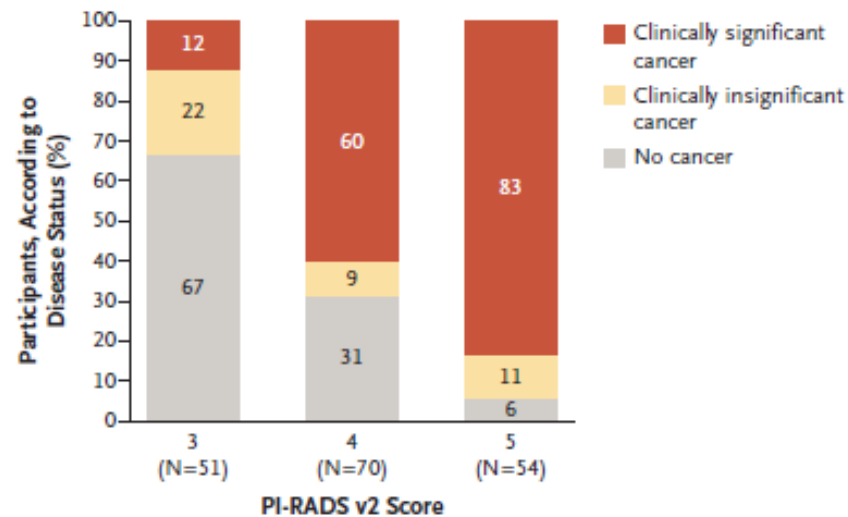


Figure 3. Percentages of Men with Clinically Significant, Clinically Insignificant, and No Cancer, Identified According to PI-RADS v2 Score.

For men randomly assigned to the MRI-targeted biopsy group, the areas of the prostate were scored with the use of the Prostate Imaging–Reporting and Data System, version 2 (PI-RADS v2). Scores range from 1 to 5, with higher numbers indicating a greater likelihood of clinically significant cancer; a score of 3 indicates equivocal results, 4 results that are likely to be prostate cancer, and 5 results that are highly likely to be prostate cancer. Men who had a score of 3 or higher underwent MRI-targeted biopsy. Clinically significant cancer was defined as the presence of a single biopsy core indicating disease of Gleason score 3+4 (Gleason sum of 7) or greater, and clinically insignificant cancer as a biopsy sample with a Gleason score of 3+3 (Gleason sum of 6). The Gleason score is composed of a primary (most predominant) grade plus a secondary (highest nonpredominant) grade; the range for a primary or secondary grade is from 3 to 5, with the Gleason sum ranging from 6 to 10, and with higher scores indicating a more aggressive form of prostate cancer. Percentages may not total 100 because of rounding.