Extraction PICO 1 EAUN Guidelines on Transrectal Ultrasound Guided Biopsy of the Prostate

Number	Number Covidence	Author, year	Extraction completed by:	Study type	Population Inclusion criteria	Population Exclusion criteria	Population Variables/ Group differences	% African Americans	DRE T1 or T2+	Median Age	Median PSA (range)	Prostate volume - mean or median	Intervention:	6 cores	8 cores	10 cores
1		Abd 2011	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Done in Covidence										No. of participants			
													Primary biopsy only			
													Location of biopsy			
2	#774	Chambo 2014	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Tiago	Prospective controlled study	DRE results suggestive of neoplasia	Carriers of coagulopathies	Age	19,66%	13.11% abnormal DRE	67 (43-89)	7 (0.39-2585)	42 (10-224)	No. of participants			351
					Elevated PSA (＞4.0 ng/mL in men older than 55 years and ＞2.5 ng/mL in men younger than 55 years), a PSA density ＞0.15 ng/mL, and an annual increase in the rate of PSA levels ＞0.75 ng/mL	Individuals with urinary tract infections (whether diagnosed at the time of biopsy or during treatment)	Race						Primary biopsy only			
						Individuals who refused to provide informed written consent							Location of biopsy			right base; right middle third; right apex; latero-lateral right; right medial; left base; left middle third; left apex; latero-lateral left; left medial.
3	#924	Dell'Atti 2015	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Ingrid	Retrospectivr study?	TRUS guided PBx, 12, 14 and 18 cores, between Sept 2007 to May 14 in the University Hospital S. Anna. Ferrara, Italy	Patient still on anticoagulation				63,4	6,8	48,3	No. of participants			
													Primary biopsy only			
													Location of biopsy			
4	#983	Ekin 2015	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Kal	Prospective	PSA 2.5ng/ml or higher	>70 years with PSA <10			T1 = 25	63,33	9,84	45,2	No. of participants			
					Abnormal DRE	<10 years life expectancy			T2 = 44				Primary biopsy only			
						PSA >50							Location of biopsy			
5	#1218	HerranzAmo 2010	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Phil	Randomized prospective	Initial Biopsy	UTI or acute prostatitis	10 cores vs 6 cores	0	T1	65,8	6,7	45,7	No. of participants	164		151
					PSA 3.5-20ng/ml	Catheter							Primary biopsy only			
					T1c	previous TURP							Location of biopsy			
6	#796 (see complications excel)	Chen 2016	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			

			Tiago	Retrospective study	Abnormal digital rectal examination and/ or T-PSA ≥ 4 ng/ml				73 (41-90)		19	54.5 ± 38.3 ml	No. of participants	409
					no previous biopsy.								Primary biopsy only	
													Location of biopsy	1 core from the base, 1 core from the mid gland, 2 cores from the apex and 1 core from the transition zone (TZ) on both sides of the gland
7	#788	Chen 2012	Corinne										No. of participants	
													Primary biopsy only	
													Location of biopsy	
			Ingrid	Randomized controlled trial?	Men underwent 12 core biopsy in the clinic, with PSA < 10 + abnormal clinic or PSA > 10 with normal DRE and TRUS. Men aged 50 - 80	Previously underwent biopsy or TUR-P Earlier acute retetion with catheter acute urinary infection last 3 months	Age PSA DRE PV	0	147 (57.4%)?	65	10,6	38,5	No. of participants	
													Primary biopsy only	
													Location of biopsy	
9	#854 (see complications excel)	Cormio 2014	Corinne										No. of participants	
													Primary biopsy only	
													Location of biopsy	
			Tiago		Consecutive patients referenced for 1st biopsy between February 2008 to November 2010, because of increased PSA (>=4 ng/ml) and/or abnormal DRE (DRE)	patients diagnosed with HG-PIN or ASAP			67 (43-90)	7.20 (0.6–1000)	50 (15–200)		No. of participants	
													Primary biopsy only	
													Location of biopsy	
11	#992	Elshafei 2014	Corinne										No. of participants	
													Primary biopsy only	
													Location of biopsy	
			Ingrid	Retrospectiv study	Patients who had initial EPBx with 12 and 14 core scheme	Patients with less than 12 cores and more than 14, or if 2 additional cores were retrieved from locations other than the apex.	1. Standard risk of PCa	437 (18%)	12 core: 64.6		5,05	37,7	No. of participants	
					Only patients with available data were included in the study		2. Higer risk of PCa	77 (149%)	14 core: 62.7		4,4	40,7	Primary biopsy only	
													Location of biopsy	
12	#1042	Filson 2016	Corinne										No. of participants	
													Primary biopsy only	
													Location of biopsy	
			Tiago	This study doesn't answer to PICO 1									No. of participants	
													Primary biopsy only	
													Location of biopsy	

13	#1103 (see complications excel)	Ghafoori 2015	Corinne									No. of participants	
												Primary biopsy only	
												Location of biopsy	
			Ingrid	Randomized clinical trial study	Pas with PSA elevation	pas with sympt/sign of infections	0	58.4 in 6 core group	8,7			No. of participants	X (60)
					Abnormal DRA	Previous biopsy		57.6 in 12 core group	7,9			Primary biopsy only	
						Prostatic TUR due to BPH		58.7 in 18 core group	8,6			Location of biopsy	Base, middle and apex on both side
						Receiving antibiotic treatment							
14	#91	Irani 2013	Corinne									No. of participants	
												Primary biopsy only	
												Location of biopsy	
			Phil	Randomized	initial Biopsy	5 alpha-reductase inhibitor		63,1	7 47.6 mls			No. of participants	
					PSA 3-20ng/ml			62.8 in 12 core group	7.5 in 12 core group	48.3 mls in 12 core group		Primary biopsy only	
					T1c or possible T2a			63.4 in 20 core group	6.6 in 20 core group	46.8 mls in 20 core group		Location of biopsy	
15	#1343	Jiang 2016	Corinne									No. of participants	
												Primary biopsy only	
												Location of biopsy	
			Tiago	Not related to PICO 1								No. of participants	
												Primary biopsy only	
												Location of biopsy	
16	#1560	Leucona 2011	Corinne									No. of participants	
												Primary biopsy only	
												Location of biopsy	
			Tiago	Prospective randomized trial	PSA level >2.5 ng/mL	Previous prostate biopsy or surgery	group A: 25 (16.8) suspicious or malignant	group A: 65.1 (45–82)	group A: 9.4 (2.2–46)	group A: 47.4 (11–220)		No. of participants	151 (group B)
						Previous diagnosis of prostate cancer	group A: 124 (83.2) benign	group B: 63.4 (40–81)	group B: 9.2 (2.6–48)	group B: 51.5 (10–194)		Primary biopsy only	151
						History of urinary retention	group B: 36 (23.8) suspicious or malignant					Location of biopsy	lateral peripheral zone
						Previous histological evidence of prostatitis and confirmed urinary tract infection	group B: 115 (76.2) benign						
33	#4164	Leitao 2017	Tiago	Prospective randomized trial	suspicious DRE	active UTI;		67 (62-72)	7.70 (.69-11.24)	48 (35-66)		No. of participants	219 (48%)
					elevated serum PSA	documented previous pathologic prostatitis						Primary biopsy only	
	Nov search				TRUS imaging findings suspicious for prostate cancer	history of urinary retention						Location of biopsy	
						recent lower urinary tract surgery							
			Corinne									No. of participants	Group B: 219. Group A: not specified. Total 237 patients with 8-12 cores

				Prospective randomized study	Suspicious DRE, elvated PSA or TRUS supicious imaging	Active UTI, previous pathologic prostatitis, history of UTI, recent lower UT surgery	Group A: Bx according Vienna Nomogram (number cores dependant of age, prostate volume and PSA). Group B: 10 cores bx. Primary endpoint: cancer detection	Not specified	Not specified	Group A: 68 (63-73). Group B: 66 (61-71) p: .010 (NS)	Group A: 7.90 (5.77-11.78). Group B: 7.60 (5.63-11) p= .349 (NS)	Group A: 50 (35-65) Group B: 46 (35-68) p= .764 (NS)	Primary biopsy only			
													Location of biopsy			
17	#1582	Leibovici 2013	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Ingrid	Prospective controlled study	All patients in the center undergoing prostate biopsy 2007	Pas with CaP			0	63 (48-82)	6.7 (0.5 - 156.0)	57 (16 - 273)	No. of participants			
													Primary biopsy only			
													Location of biopsy			
18	#1673	Lughezzani 2010	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Tiago	systematic review	This study doesn't answer to PICO 1								No. of participants			
													Primary biopsy only			
													Location of biopsy			
19	#1776	Miyoshi 2014	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Tiago	Excluded (transperineal biopsies)- not for PICO 1									No. of participants			
													Primary biopsy only			
													Location of biopsy			
20	#1783	Mohammed 2016	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Tiago	Retrospective study	Positive TRUS biopsy (Gleason >= 6)	Negative TRUS biopsy			group A: 26 (18.2 %) abnormal	group A: 59.6 ± 6.6	group A: 9 ± 5.1	group A: 24.6 ± 5.7	No. of participants	143		
						Metastatic prostate cancer at the time of diagnosis High-grade prostatic intraepithelial neoplasia (PIN)			group B: 42 (29.4 %) abnormal	group B: 61 ± 6.2	group B: 8.5 ± 4.6	group B: 23.6 ± 6.2	Primary biopsy only			
													Location of biopsy			
21	#1882	Nomikos 2011	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			
			Ingrid	Retrospectiv Reviewed	Men underwent TRUS prostate biopsy in the clinic, between april 2007 - august 2009.	age of 75 and older				65,4	6,2	42,5	No. of participants		243 (64.11%)	
					abnormal DRE	PSA over 20 ng/mL				66,1	6,2	46,7	Primary biopsy only			
					elevated PSA								Location of biopsy		lat.bas, lat mid, apex, parasagittal mid-zone, parasagital base on both side	
22	#1931	Ouzaid 2013	Corinne										No. of participants			
													Primary biopsy only			
													Location of biopsy			

			Tiago	Retrospective Cohort study	patients who had a 1st positive 21-core biopsy followed by radical prostatectomy between 2001 and 2009.	patients treated with Finasteride, Dutasteride and preoperative hormonal therapy		6-core- T1: 240 (81%) ;T2+: 57 (19%) 12-core T1: 333 (82,8); T2+: 69 (17,2%) 21-core T1: 42 (98%) ;T2+: 1 82%)	63 (42-76)	10.25 (1.1-67)			No. of participants Primary biopsy only Location of biopsy	standard sextant biopsies
23	#1968	Park 2010	Corinne										No. of participants Primary biopsy only Location of biopsy	
			Phil	Prospective randomized	PSA >3ng/ml	Repeat Biopsy	12 core vs 18 core			68	7,1	42	No. of participants Primary biopsy only Location of biopsy	
24	#2124	Rodriguez-Covarrubias 2011	Corinne										No. of participants Primary biopsy only Location of biopsy	
			Tiago	Prospective randomized trial	Age 45 to 75 years Abnormal DRE and/or PSA 4 to 20 ng/ml No previous biopsy	Previous PCa diagnosis PSA greater than 20 ng/ml Clinical stage T3 or T4 Previous 5 alfa-reductase inhibitor use (finasteride or dutasteride) or androgen deprivation therapy		group A: 12 abnormal group A: 63 normal group B: 10 abnormal group B: 65 normal	group A: 64.50 ± 7.26 (41–80) group B: 65.08 ± 6.82 (50–79)	group A: 8.89 ± 3.83 (3.23–19.80) group B: 8.40 ± 3.60 (0.86–18.00)	group A: 53.01 ± 30.25 (16.00–219.00) group B: 54.11 ± 27.59 (13.60–147.00)		No. of participants Primary biopsy only Location of biopsy	
25	#2210	Scattoni 2014	Corinne										No. of participants Primary biopsy only Location of biopsy	
			Ingrid	Critical Litteratur Review Systematic review	Written litteratur about prostatebiopsy Jan05 - Jan14	523 articles was excluded in the Screening							No. of participants Primary biopsy only Location of biopsy	
26	#2211	Scattoni 2010	Corinne										No. of participants Primary biopsy only Location of biopsy	
			Ingrid	Systematic review									No. of participants Primary biopsy only Location of biopsy	
27	#2213	Scattoni 2010	Corinne										No. of participants Primary biopsy only Location of biopsy	
			Ingrid	Systematic review. We have a updatet version									No. of participants Primary biopsy only Location of biopsy	

28	#2389	Tanaka 2015	Corinne												No. of participants				
															Primary biopsy only				
															Location of biopsy				
			Tiago		Abnormal PSA	Acute or chronic prostatitis				group A: 71 (22-94)	group A: 7.1 (0.3-16.920)	group A: 33.2 (6-176)	No. of participants	169		331		237
					Abnormal DRE	Urinary retention				group B: 70 (22-89)	group B: 5.8 (0.3-83.6)	group B: 38.8 (6-176)	Primary biopsy only					
					Abnormal findings by transrectal ultrasound.	Urinary tract infection Indwelling urinary catheter				group C: 73 (49-94)	group C: 10.1 (0.6-16.920)	group C: (28.1 (10-155)	Location of biopsy					
29	#2460	Tsivian 2012	Corinne										No. of participants					
													Primary biopsy only					
													Location of biopsy					
			Ingrid	Retrospective study	Pas opr RARP 1990-2007. 859 records	None?	Prostate</= 40g	78 (17.9)		60,4		5,5	No. of participants	6 - 9 cores		10 - 20 cores		
							Prostate > 40 g			62,4		5,8	Primary biopsy only					
													Location of biopsy					
30	#2490	Ukimura 2013	Corinne	comprehensive Medline search/ review. Excluded from data extraction but we check the comments- we can use it for the text of the guidelines									No. of participants					
													Primary biopsy only					
													Location of biopsy					
			Kal	Systematic review data excluded elsewhere									No. of participants					
													Primary biopsy only					
													Location of biopsy					
31	#2685	Yoon 2012	Corinne	Randomized prospective study	Elevated PSA between 2.5- 20 ng/Ml, regardless of abnormal finding on digital rectal examination and transrectal ultrasonography	Cores 10 versus 12. Prostate volume <40ml versus <40ml. PSA 2.5-4.0 versus 4.1-10 versus 10.1-20	Only asian patients	NA	10 cores group: 66.5 +/-9.7. 12 cores group: 64.4 +/-10.2. p .053	10 cores group:10.5 +/13.3. 12 cores group: 12.1 +/-20.1. p .411	10 cores group:42.6 +/22.4. 12 cores group: 42.0 +/-4.9. p .723	No. of participants					351
													Primary biopsy only					Not specified
													Location of biopsy					Sextant+ lateral peripheral zone biopsy cores. apex of the lateral peripheral zone added to 10 cores
			Kal	Prospective RT	PSA 2.5 to 20					62,9	10.9-15.3	42.4 - 20.7ml	No. of participants					351
													Primary biopsy only					
													Location of biopsy					Sextant technique
32	#2712	Zavaski 2014	Corinne										No. of participants					
													Primary biopsy only					
													Location of biopsy					
			Tiago	This study doesn't answer to PICO 1									No. of participants					
													Primary biopsy only					
													Location of biopsy					

Number	Number Covidence	Author, year	12 cores	13 cores	14 cores	16 cores	18 cores	20 cores	21 cores	overall	Outcomes (%, N), control, overall	6 cores	8 cores	10 cores	12 cores
1		Abd 2011									Positive pick-up rate (overall cancer diagnosis)				
											No./% of prostate cancer Gleason score 6				
											No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				
											Positive pick-up rate (overall cancer diagnosis)				
											No./% of prostate cancer Gleason score 6				
											No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				
2	#774	Chambo 2014									Positive pick-up rate (overall cancer diagnosis)				
											No./% of prostate cancer Gleason score 6				
											No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				
			351			351					Positive pick-up rate (overall cancer diagnosis)			102	99
											No./% of prostate cancer Gleason score 6			35	35
			right base; right middle third; right apex; left base; left middle third; left apex; right base; right middle third; right apex; left base; left middle third; left apex.			right base; right middle third; right apex; latero-lateral right; right medial; left base; left middle third; left apex; latero-lateral left; left medial;, right base; right middle third; right apex; left base; left middle third; left apex.					No. of clinically significant cancers (Gleason score 7 or above			67	64
											No. or % of positive cores				
3	#924	Dell'Atti 2015									Positive pick-up rate (overall cancer diagnosis)				
											No./% of prostate cancer Gleason score 6				
											No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				
			X		X		X			1356	Positive pick-up rate (overall cancer diagnosis)			111 (8.2%)	
											No./% of prostate cancer Gleason score 6				87
			Apex, middle and base of each lateral lobe		Apex, middle and base of each lateral lobe + transition zone (TZ)		Apex, middle and base of each lateral lobe + 6 in the TZ				No. of clinically significant cancers (Gleason score 7 or above				34
											No. or % of positive cores				5,5
4	#983	Ekin 2015									Positive pick-up rate (overall cancer diagnosis)				
											No./% of prostate cancer Gleason score 6				
											No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				
					451						Positive pick-up rate (overall cancer diagnosis)				
											No./% of prostate cancer Gleason score 6				
					L&R Apex/mid/base, med + lat + ant						No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				
5	#1218	HerranzAmo 2010									Positive pick-up rate (overall cancer diagnosis)				
											No./% of prostate cancer Gleason score 6				
											No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				
											Positive pick-up rate (overall cancer diagnosis)	41 (25%)		45 (29.8%)	
											No./% of prostate cancer Gleason score 6				
											No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				
6	#796 (see complications excel)	Chen 2016									Positive pick-up rate (overall cancer diagnosis)				
											No./% of prostate cancer Gleason score 6				
											No. of clinically significant cancers (Gleason score 7 or above				
											No. or % of positive cores				

			409			Positive pick-up rate (overall cancer diagnosis)	181 (44.3%)	
			409			No./% of prostate cancer Gleason score 6		
			3 midline punctures, 6 parasagittal midline punctures, and 4 lateral punctures			No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
7	#788	Chen 2012				Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
			923			Positive pick-up rate (overall cancer diagnosis)	243 (27.4%)	
						No./% of prostate cancer Gleason score 6	153 (60.5%)	
			lateral base, mid-gland and apex			No. of clinically significant cancers (Gleason score 7 or above	100 (57+43) (39.5%)	
						No. or % of positive cores	1 - 12 (3.2%)	
9	#854 (see complicatio ns excel)	Cormio 2014				Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
			1081			Positive pick-up rate (overall cancer diagnosis)	358	66
			1081			No./% of prostate cancer Gleason score 6		
			1081		traditional sextant (6-core), 4 lateral peripheral (10-core), 4 paramedian peripheral (14-core) and additional 4 lateral peripheral cores	No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
11	#992	Elshafei 2014				Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
			2421	532	3350	Positive pick-up rate (overall cancer diagnosis)	41,85%	
						No./% of prostate cancer Gleason score 6		
			2 Apex, 2 Middle and 2 Bas on both sides	2 Apex, 2 Middle and 2 Bas on both sides +n2 extra core from the extreme anterior apex		No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores	3 (2 - 6) 2 in the standard r	
12	#1042	Filson 2016				Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
						Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		

13	#1103 (see complications excel)	Ghafoori 2015				Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
			X (60)	X (60)		Positive pick-up rate (overall cancer diagnosis)	8 (13.3%)	21(35%)
						No./% of prostate cancer Gleason score 6		
			base, upper mid, lower mid and apex on both side + one from middle base and apex + one more medially and one more laterally	base, upper mid, lower mid and apex on both side + one from middle base and apex + one more medially and one more laterally + from each segment + from periurethral inner gland (bilaterally)		No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
14	#91	Irani 2013				Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
			169	166		Positive pick-up rate (overall cancer diagnosis)		71 (42%)
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
15	#1343	Jiang 2016				Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
						Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
16	#1560	Leucona 2011				Positive pick-up rate (overall cancer diagnosis)		
						No./% of prostate cancer Gleason score 6		
						No. of clinically significant cancers (Gleason score 7 or above		
						No. or % of positive cores		
				152 (group A)		Positive pick-up rate (overall cancer diagnosis)		58 (38.4%)
				152		No./% of prostate cancer Gleason score 6		9 (6%)
				lateral peripheral zone		No. of clinically significant cancers (Gleason score 7 or above		
				Vienna nomogram cores 10.2 (6-18)		No. or % of positive cores		
33	#4164	Leitao 2017		456		Positive pick-up rate (overall cancer diagnosis)		84 (38.4%)
						No./% of prostate cancer Gleason score 6		
	Nov search					No. of clinically significant cancers (Gleason score 7 or above		
				237 (52%) on Vienna normogram group		No. or % of positive cores		
						Positive pick-up rate (overall cancer diagnosis)		

							No./% of prostate cancer Gleason score 6	
							No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
17	#1582	Leibovici 2013					Positive pick-up rate (overall cancer diagnosis)	
							No./% of prostate cancer Gleason score 6	
							No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
			161				Positive pick-up rate (overall cancer diagnosis)	45 (24+17+4)
			155 ?				No./% of prostate cancer Gleason score 6	24
			3 Base, 3 mid, 3 apex + lateral parallel locations, on both sides				No. of clinically significant cancers (Gleason score 7 or above	21
							No. or % of positive cores	
18	#1673	Lughezzani 2010					Positive pick-up rate (overall cancer diagnosis)	
							No./% of prostate cancer Gleason score 6	
							No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
							Positive pick-up rate (overall cancer diagnosis)	
							No./% of prostate cancer Gleason score 6	
							No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
19	#1776	Miyoshi 2014					Positive pick-up rate (overall cancer diagnosis)	
							No./% of prostate cancer Gleason score 6	
							No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
			195	137	332		Positive pick-up rate (overall cancer diagnosis)	
			195	137	332		No./% of prostate cancer Gleason score 6	
			8 cores from peripheral zone + 4 cores from transition zone	8 cores from peripheral zone + 8 cores from transition zone			No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
20	#1783	Mohammed 2016					Positive pick-up rate (overall cancer diagnosis)	
							No./% of prostate cancer Gleason score 6	
							No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
			143				Positive pick-up rate (overall cancer diagnosis)	43% 53%
							No./% of prostate cancer Gleason score 6	71 (50%) 66 (46%)
							No. of clinically significant cancers (Gleason score 7 or above	72 (50%) 77 (54%)
							No. or % of positive cores	
21	#1882	Nomikos 2011					Positive pick-up rate (overall cancer diagnosis)	
							No./% of prostate cancer Gleason score 6	
							No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
				24 core: 136 (35.89%)	379		Positive pick-up rate (overall cancer diagnosis)	39,09%
							No./% of prostate cancer Gleason score 6	
				2 lat.bas, 3 lat mid, 3 apex, 2 parasagittal mid-zone, 2 parasagital base on both side			No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	
22	#1931	Ouzaid 2013					Positive pick-up rate (overall cancer diagnosis)	
							No./% of prostate cancer Gleason score 6	
							No. of clinically significant cancers (Gleason score 7 or above	
							No. or % of positive cores	

							443	443	Positive pick-up rate (overall cancer diagnosis)	297 (67%)	402 (90.7%)
									No./% of prostate cancer Gleason score 6	Low risk- 139 (47%)	Low risk- 204 (50.7%)
			standard sextant biopsies + 6 posterolateral cores				standard sextant biopsies + 6 posterolateral cores + midline/transition zone cores		No. of clinically significant cancers (Gleason score 7 or above	Intermediate risk- 126 (42%); high risk- 32 (11%)	Intermediate risk- 159 (39
									No. or % of positive cores		
23	#1968	Park 2010							Positive pick-up rate (overall cancer diagnosis)		
									No./% of prostate cancer Gleason score 6		
									No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		
			118			115			Positive pick-up rate (overall cancer diagnosis)		40 (33.9%)
			Y			Y			No./% of prostate cancer Gleason score 6		21 (52.5%)
			cores at apex middle and base of right lateral, right medial, left medial and left lateral			addition 3 cores from each side between the other groups			No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		
24	#2124	Rodriguez-Covarrubias 2011							Positive pick-up rate (overall cancer diagnosis)		
									No./% of prostate cancer Gleason score 6		
									No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		
			75			75			Positive pick-up rate (overall cancer diagnosis)		23 (30.7%)
			75			75			No./% of prostate cancer Gleason score 6		13 (56.5%)
			6 cores from each lateral lobe			6 cores from each lateral lobe + 3 cores from the far lateral peripheral zone of each lobe			No. of clinically significant cancers (Gleason score 7 or above		10 (43.4)
									No. or % of positive cores		25,70%
25	#2210	Scattoni 2014							Positive pick-up rate (overall cancer diagnosis)		
									No./% of prostate cancer Gleason score 6		
									No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		
									Positive pick-up rate (overall cancer diagnosis)		
									No./% of prostate cancer Gleason score 6		
									No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		
26	#2211	Scattoni 2010							Positive pick-up rate (overall cancer diagnosis)		
									No./% of prostate cancer Gleason score 6		
									No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		
									Positive pick-up rate (overall cancer diagnosis)		
									No./% of prostate cancer Gleason score 6		
									No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		
27	#2213	Scattoni 2010							Positive pick-up rate (overall cancer diagnosis)		
									No./% of prostate cancer Gleason score 6		
									No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		
									Positive pick-up rate (overall cancer diagnosis)		
									No./% of prostate cancer Gleason score 6		
									No. of clinically significant cancers (Gleason score 7 or above		
									No. or % of positive cores		

28	#2389	Tanaka 2015		Positive pick-up rate (overall cancer diagnosis)				
				No./% of prostate cancer Gleason score 6				
				No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				
			199	Positive pick-up rate (overall cancer diagnosis)	128 (75.7%)	170 (51.4%)	107 (45.1%)	44 (22.1%)
				No./% of prostate cancer Gleason score 6				
				No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				
29	#2460	Tsivian 2012		Positive pick-up rate (overall cancer diagnosis)				
				No./% of prostate cancer Gleason score 6				
				No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				
				Positive pick-up rate (overall cancer diagnosis)				
				No./% of prostate cancer Gleason score 6				
				No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				
30	#2490	Ukimura 2013		Positive pick-up rate (overall cancer diagnosis)				
				No./% of prostate cancer Gleason score 6				
				No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				
				Positive pick-up rate (overall cancer diagnosis)				
				No./% of prostate cancer Gleason score 6				
				No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				
31	#2685	Yoon 2012	123	Positive pick-up rate (overall cancer diagnosis)			93 (26.4%)	35 (28,4%) p= .378
			Not specified	No./% of prostate cancer Gleason score 6			NA	NA
			apex of the lateral peripheral zone added to 10 cores	No. of clinically significant cancers (Gleason score 7 or above			NA	NA
				No. or % of positive cores			NA	
			123	Positive pick-up rate (overall cancer diagnosis)			93 (26.4%)	35(28.4%)
				No./% of prostate cancer Gleason score 6				
			10 core sextant technique + 2 from apex of lateral PZ	No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				
32	#2712	Zavaski 2014		Positive pick-up rate (overall cancer diagnosis)				
				No./% of prostate cancer Gleason score 6				
				No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				
				Positive pick-up rate (overall cancer diagnosis)				
				No./% of prostate cancer Gleason score 6				
				No. of clinically significant cancers (Gleason score 7 or above				
				No. or % of positive cores				

Number	Number Covidence	Author, year	13 cores	14 cores	16 cores	18 cores	20 cores	21 cores	overall	Other. Please add any data you feel is interesting.	Conclusion / remarks
1		Abd 2011									
2	#774	Chambo 2014									
						107					No significant differences in cancer detection were found between the 3 groups.
						20					A 10-core biopsy is acceptable as a first biopsy.
						67					Additional biopsies should capture more lateral regions of the prostate
3	#924	Dell'Atti 2015									
			198 (14.6%)			253 (18.6%)				Ned more study on PV+the number of cores?	When PV increases, the core numbers should be increased in first PBx setting
			113			202					
			56			70					
			6,2			6,9					
4	#983	Ekin 2015									
			147						147 (32.6%)		Gold standard for Pca dx is at least 8 cores
											Although most dx was with 14 cores it is important to consider that these patients might have clinically insignificant PCa
			97								
			50								
			4,9								
5	#1218	HerranzAmo 2010									
										Study stratified for prostate volume and showed for prostates over 50ml sextant biopsy insufficient (p=0.001)	
									86 (27.3%)		
									51 (59.3%)	Of 229 with benign pathology 116 (46.3%) had second biopsy which detected cancer in 13 (12.3%)	
6	#796 (see complications excel)	Chen 2016									

			185 (45.2%)		They didn't perform a 10-core biopsy to any patient. They assumed cancer detection rate of 10-core biopsies by the cores taken from common areas of 10 and 13-core biopsies.	Detection rate of prostate cancer enhances with increasing PSA level and decreaes with accruing prostate volume; 10- and 13-core biopsies have similar yield in both positive detection rate and percentage of positive cores,, however 10-core biopsy have lower risk of complications (hematuria). A 13-core biopsy should not be advised to detect prostate cancer.
7	#788	Chen 2012				12 core biopsy recommended
9	#854 (see complicatio ns excel)	Cormio 2014	26	2	452	The study only have 1 group of patients. All of them underwent 18-core biopsies and at the end, based on the location of prostate cancer detetion the authors assumed the ideal number of cores based on their potocol.	10-core protocol improves detection ates at fist biopsy compared to 6-cores. Adding lateral peripheral cores did not improve cancer detection rates at first biopsy Adding 4 paramedian peripheral samples, fail to provide a statistically significant advantage in the overall patients' population, however provided a statistically significant increase in cancer detection rate in patients with low PSA density.
11	#992	Elshafei 2014	46,24%			In the high risk group, there were significantly different between 12 and 14 core, not in the standard group When stratified by risk according to pre-biopsy clinical criteria, they believe that the 14 core scheme is most beneficial in patients with an elevated PSA>2.5ng/ml and <10ng/ml, normal DRE and no lesions evident of TRUS.
risk and 5 in the higher risk group			3 (2 - 6) 3 in the standard risk and 3 in the higher risk group			
12	#1042	Filson 2016				This study doesn't answer to PICO 1

13	#1103 (see complications excel)	Ghafoori 2015				
			24 (40%)		Complications recreased from 12 to 18 core	From 6 to 12 cores increased canser detection rate Rom 12 to 18 core biopsy resulted in no statistically significant difference for detection of canser, but the infection increased. 12 core biopsy approach seems to have optimum balance between the cancer detection rate and biopsy complications.
14	#91	Irani 2013				
			81 (48.8%)	152 (45.4%)	Complications including pain using VAS, fever at day 5 and Haematuria, haematospermia nad recta bleeding at day 5 and 15 were recorded but no diiferences noted excepted increased urinary discomfort at 5 days in the extended group.	
15	#1343	Jiang 2016				
					Meta-analysis not related to PICO 1 but can be very interesting for writting this chapter	
16	#1560	Leucona 2011				
				group A: 54 (35.5%)	group A: no. of cores varies according to Vienna nomogram	No significant differences were found between cancer detection using Vienna nomogram or 8-core biopsy
				groupA: 5 (3.3%)	group B: 8-core biopsy	there is no significant advantage in using the Vienna nomogram to determine the number of prostate biopsy cores to be taken, compared to an 8-core biopsy protocol.
33	#4164 Nov search	Leitao 2017		Vienna normogram: 101 (	Patients in the comparison group were submitted to biopsies according to Vienna Nomogram and the article doesn't specifies number of cores taken in this group.	The use of the Vienna Nomogram compared with a 10-core biopsy protocol does not significantly increase the overall prostate cancer detection rate. No significant difference was found.
				Group B (10 cores): 38.4%.	Group A (Vienna nomogram): 42.6%. p= .705 (NS). Wh	No significant difference in the overall cancer detection rate between both groups. Cancer detection rate increase in both groups with the age of patients. In both groups, decrease of detection rate with increase of prostate volume but study could be underpowered.

17	#1582	Leibovici 2013			
					Patients with positive biopsy tended to have smaller prostates than patients with neg biopsy.
					12 core may be insufficient for prostates larger than 72 ml
18	#1673	Lughezzani 2010			
					Systematic-review not related to PICO 1 but can be interesting for writting this chapter
19	#1776	Miyoshi 2014			
				Excluded (transperineal biopsies)- not for PICO 1	
20	#1783	Mohammed 2016			
				group A: 6-core	12-core biopsies are associated with higher PCa cancer detection rates, greater accuracy for Gleason grading and no differences for detecting clinically insignificant PCa compared to 6-core biopsies.
				group B: 12-core	12-core biopsies are not associated with a higher rate of post biopsy complications compared to 6-core biopsies
21	#1882	Nomikos 2011			
			24 cores: 34.55%	24 cores	24 cores did not show any benefit vs. 10 cores
22	#1931	Ouzaid 2013			

										There was only 1 group of patients and all of them were submitted to 21-cores biopsy. The authors assumed cancer detection rate related to 6 and 12-cores only based on localization of the cores.	This study invalidates the widespread idea sustaining that cancers diagnosed by more than 12 biopsies are less aggressive
								41 (9.2%)	Mean 4 (1-21)		
										If a patient had diferent site of PCa, the patient was sorted according to the 1rst positive site.	
								Low risk- 24 (58%)			
.6%) high risk- 39 (9.7%)										It seems hat if we extend the number of cores to 21 we mainly find low risk prostate cancer	
								Intermediate risk- 14 (35%)	high risk- 3 (7%)		
									41,70%		
23	#1968	Park 2010									
										Assessed detection rate with regard to prostate volume and PSAD. Suggested 18 core protocol effective is PSAD 0.15 -0.25	
							49 (42.6%)				
							23 (47%)				
24	#2124	Rodriguez-Covarrubias 2011									
										group A: 12-core	18-core biopsies improves PCa detection, does not increase morbidity but may increase the detection of clinically insignificant cancer.
							36 (48%)				
							21 (58.3%)			group B: 18-core	12-core biopsies are adequate for PCa detection (at least at first biopsy).
							15 (41.7%)				
							24,30%				
25	#2210	Scattoni 2014									
										SPBx seems to be necessary in some cases, mostly when PSA < 10 ng/ml and in repeat setting.	I`m not sure if it answer to PICO 1, but it`s seems important to the guidlines.
26	#2211	Scattoni 2010									
											PBx schemes are evolving also because the scenario in which a PBx is necessary is changing. Random prostate PBx do not represent the future, while imaging target biopsy are becoming more popular. However, there is now a growing evidence in the literature that (a) saturation PBx (>20 cores) (SPBx) might be indicated in patients with PSA <10 ng/ml or low PSA density or large prostate and (b) an individualized approach with more than 12 cores according to the clinical characteristics of the patients may optimize cancer detection in the single patient.
27	#2213	Scattoni 2010									

28	#2389	Tanaka 2015				
				449 patients	group A: all patients	Cancer detection using NURTG normogram performing 6, 8, 10 or 12-core biopses according to the relation between the age and prostate volume is similar compared with more expanded number of biopsy cores
				143 (32%)	group B: no cancer group	In older patients the number of cores can be reduced.
				304 (68%)	group C: cancer group	
29	#2460	Tsivian 2012				
					They compare 6 - 9 cores (sextant) to 10 - 20 cores (extended)	Biopsy accuracy in identifying unilateral prostate cancer depends on prostate weight. The number of cores may be extended in prostate more than 40 g.
					This study is only from patients diagnosed with CaP and operated RARP	
30	#2490	Ukimura 2013				
						A summary of contemporary recommendations (Table 3) supports a 10- to 12-core extended PB scheme, with additional cores from areas suspected by DRE or TRUS.
						Figure 1 indicates the recommended biopsy location and direction of a typical transrectal 12-core biopsy template to maximise the sampling from the PZ (without the distal end of the needle into the TZ). Repeated bx: Recognising the inherent potential for a systematic biopsy to miss (usually) small-volume cancers, a significant number of men will undergo repeat PB.
31	#2685	Yoon 2012				
				(128)27%		
32	#2712	Zavaski 2014				
					The authors only mention no. of cores related to forecast of final tumor volume.	