a multicentre study
EuroSIDA

15th European AIDS conference

Testing patterns and predictive value of Prostate Specific Antigen in a European HIV – positive cohort: Does one size fit all?

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Background

- cART has improved survival of HIV+ people and the proportion living past 50 is increasing
- Cancers associated with older age, such as prostate cancer, are expected to become more prevalent
- Prostate specific antigen (PSA) is a protein associated with higher prostate cancer risk

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Background

- There is limited data available on variations in PSA testing practices in HIV+ men

- No clear guidelines on use of PSA tests in HIV+ men, which largely rely on application of recommendations for the general population (PSA>4 ug/L)

Aims

- To describe variations in PSA testing patterns in European HIV+ men
  - ↳ Cohort study in EuroSIDA

- To assess the use of PSA>4 µg/L to indicate PCa risk and to identify whether a better cut-off exists for HIV positive people
  - ↳ nested case-control study in EuroSIDA

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1. Variations in PSA testing in HIV+ men across Europe

PSA testing rates in Europe

Cohort study

PCa free at baseline

Baseline: Latest of first visit or 1 Jan 2008

Centres screening ≥ 5% of men per year

Followed until first PCa diagnosis, last visit or death

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PSA testing rates: Baseline characteristics

Baseline N(%)/Median (IQR)	All Men	≥1 PSA test
Overall	4,482 (100)	1,318 (100)
Age (years)	41 (35,48)	44 (38,52)
Region		
East	694 (15)	302 (23)
Argentina	262 (6)	27 (2)
South	1,389 (31)	393 (30)
West	814 (18)	284 (22)
North	1,323 (30)	312 (24)
Risk group		
Homosexual	2,701 (60)	860 (65)
Heterosexual	561 (13)	141 (11)
IDU	925 (21)	242 (18)
Non-white ethnicity	348 (8)	78 (6)
Prior AIDS event	1,202 (27)	413 (31)
Prior Non-AIDS event*	198 (4)	66 (5)
Prior ART	3,917 (87)	1,205 (91)
CD4 cells/mm^3	510 (360,702)	519 (368,720)
HIV-viral load copies/ml	<49 (<39,<59)	<49 (<39,<49)

*Non-AIDS defining events: pancreatitis, grade 3 or 4 hepatic encephalopathy or liver-related death, myocardial infarction, stroke, coronary artery bypass graft, coronary angioplasty, carotid endarterectomy (grouped together as serious CV events), and end-stage renal disease.

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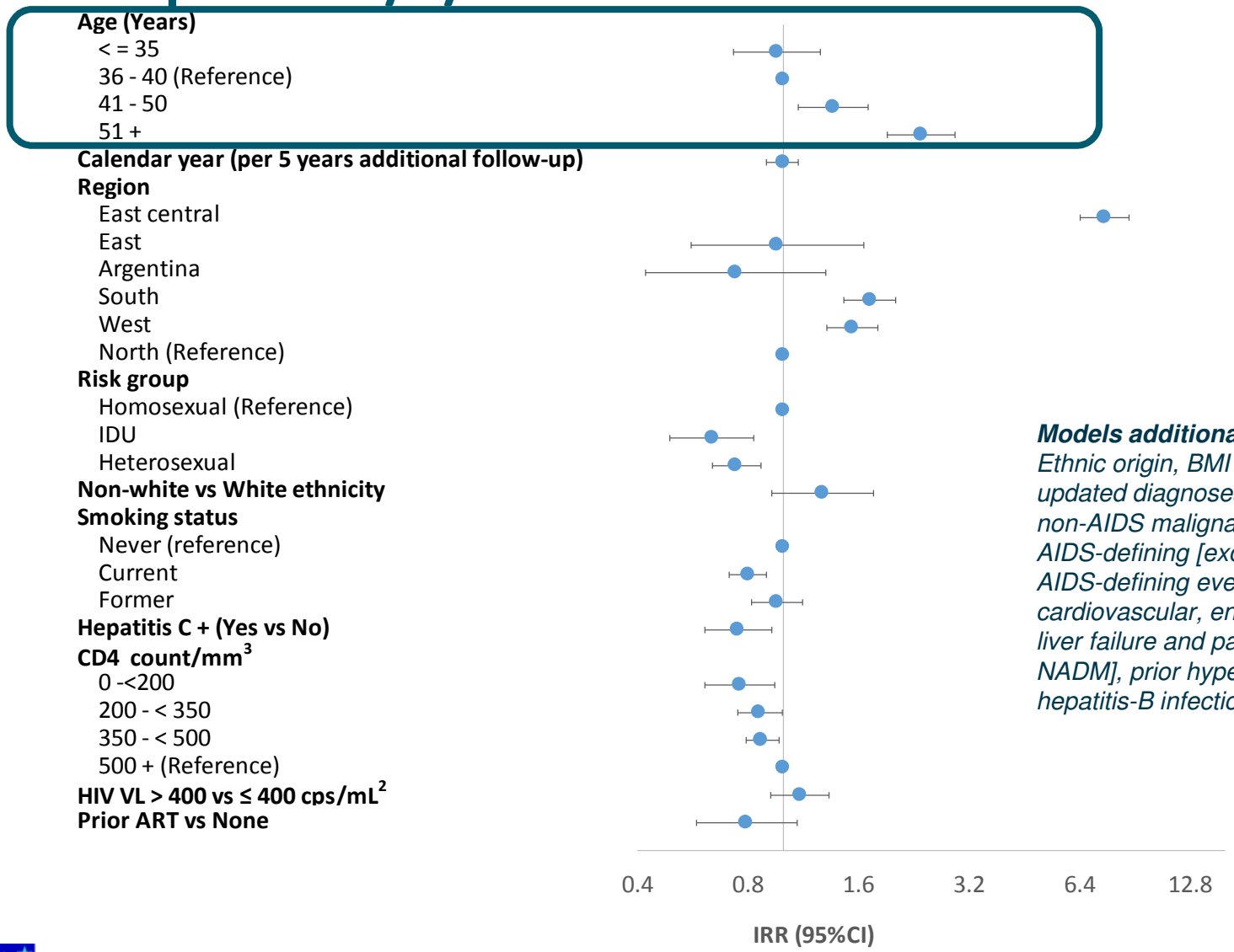
Adjusted incidence rate ratios of receiving PSA testing during follow-up after 1/1/2008



Models additionally adjusted for:
Ethnic origin, BMI at baseline, and time-updated diagnoses of AIDS defining and non-AIDS malignancies [ADM], NADM, AIDS-defining [excluding ADM], and non-AIDS-defining events [defined as cardiovascular, end-stage renal disease, liver failure and pancreatitis, excluding NADM], prior hypertension, prior and hepatitis-B infection

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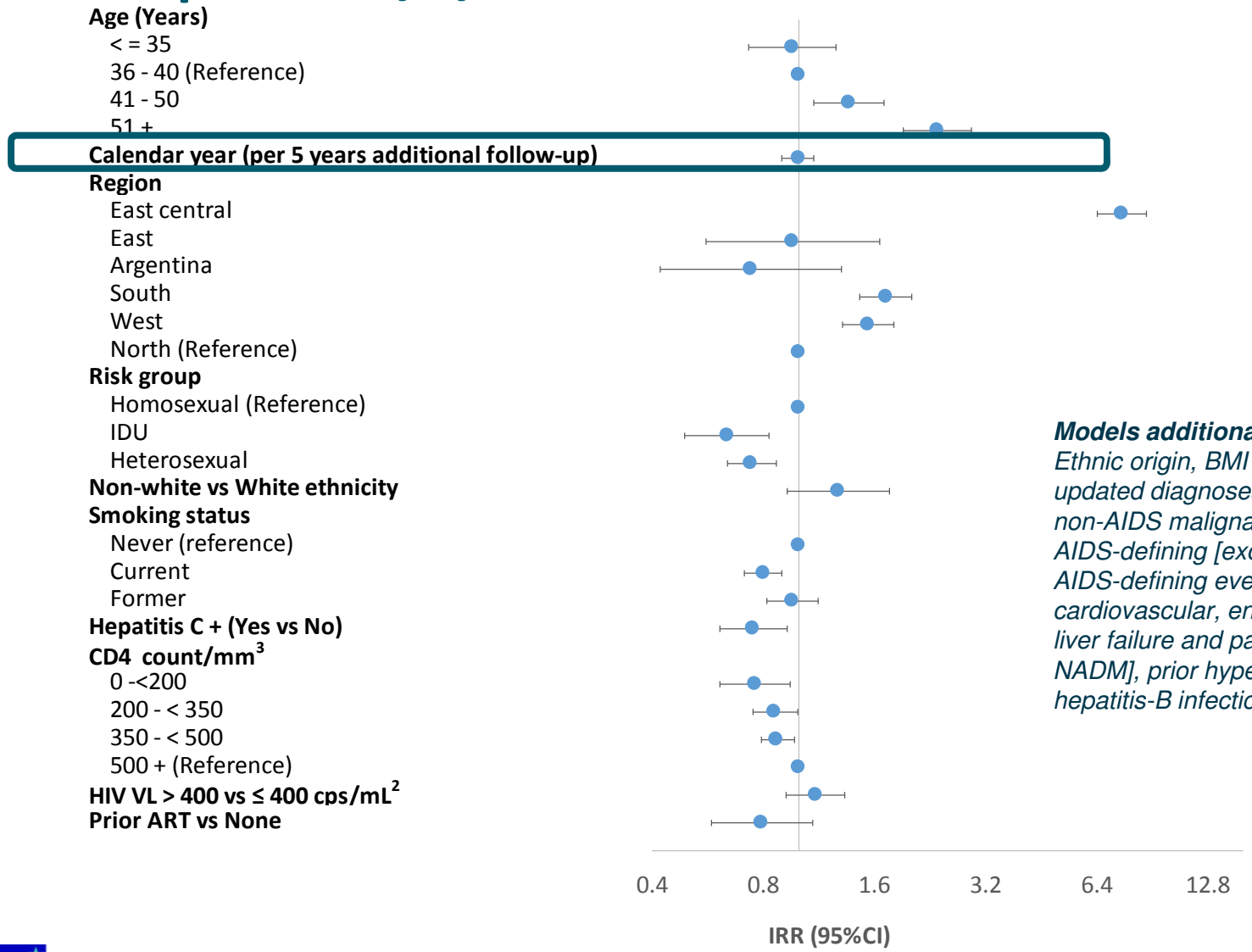

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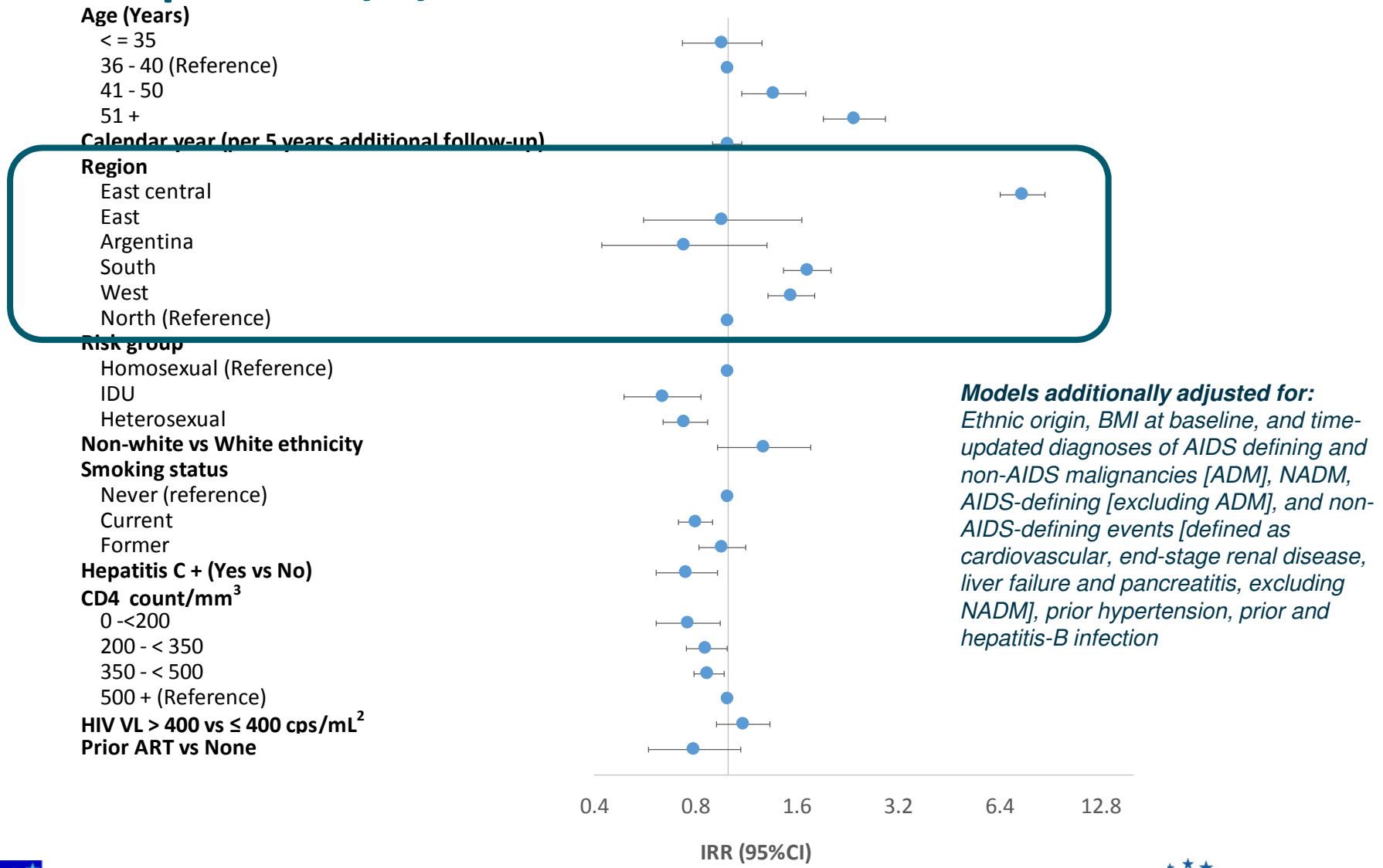

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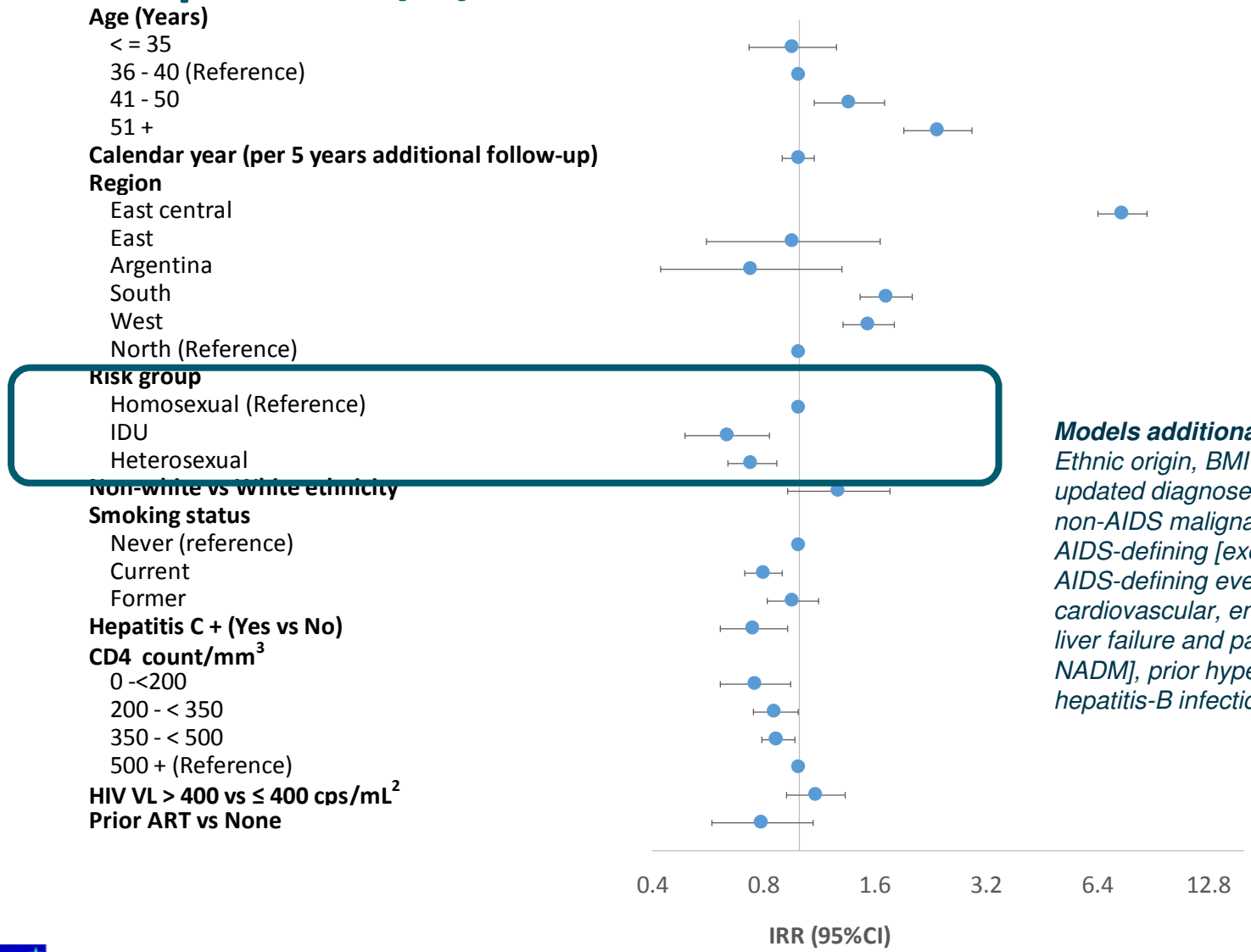

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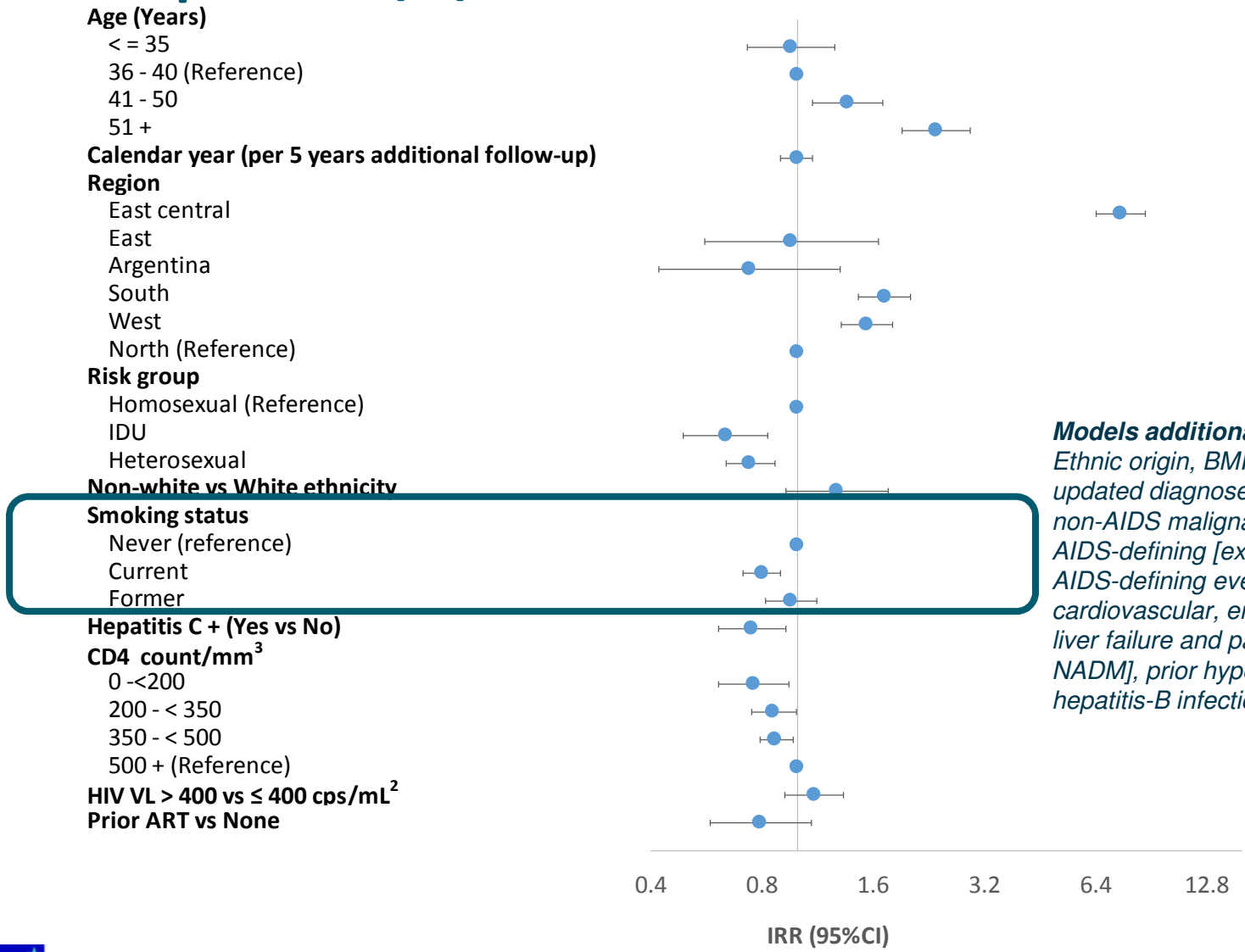

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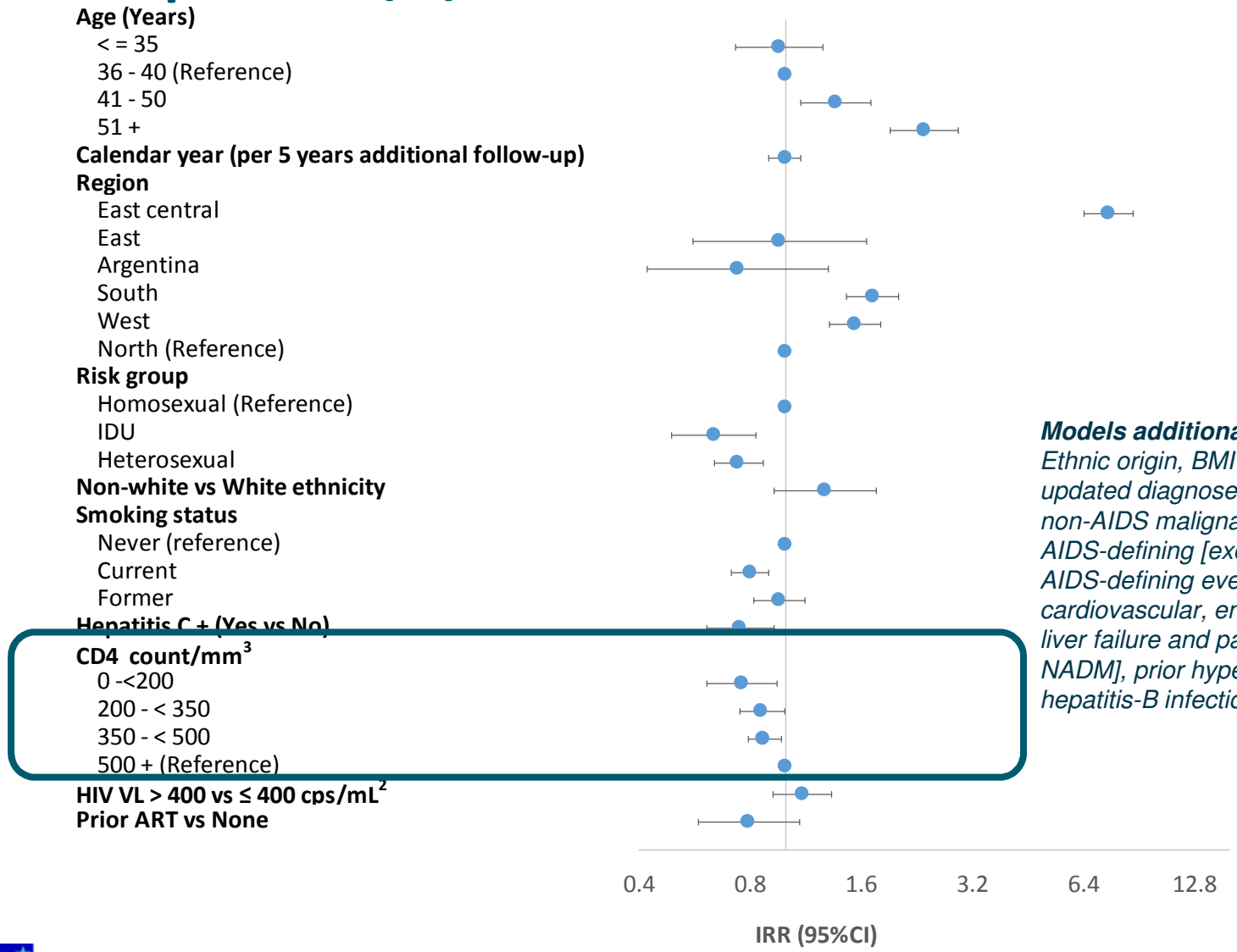

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2. To assess the use of PSA>4 µg/L to indicate PCa risk and to identify whether a better cut-off exists for HIV positive people

Optimal PSA cut off

Nested case control study

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Optimal PSA cut off

Nested case control study

Cases

Prostate cancer

After 1 Jan 2001

Prior plasma sample

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Optimal PSA cut off

Nested case control study

Cases/ **Controls**

No prostate cancer

After 1 Jan 2001

Prior plasma sample

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Optimal PSA cut off

Nested case control study

Cases/controls

Matched

1st sample date
± 2years

Last sample date
± 2years

Age (1st sample)
± 10 years

CD4 (1st sample)
±200 cells/mm^3

Region of Europe

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Optimal PSA cut off

Nested case control study

Cases/controls

Total PSA (tPSA)

Matched

Samples

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Optimal PSA cut off

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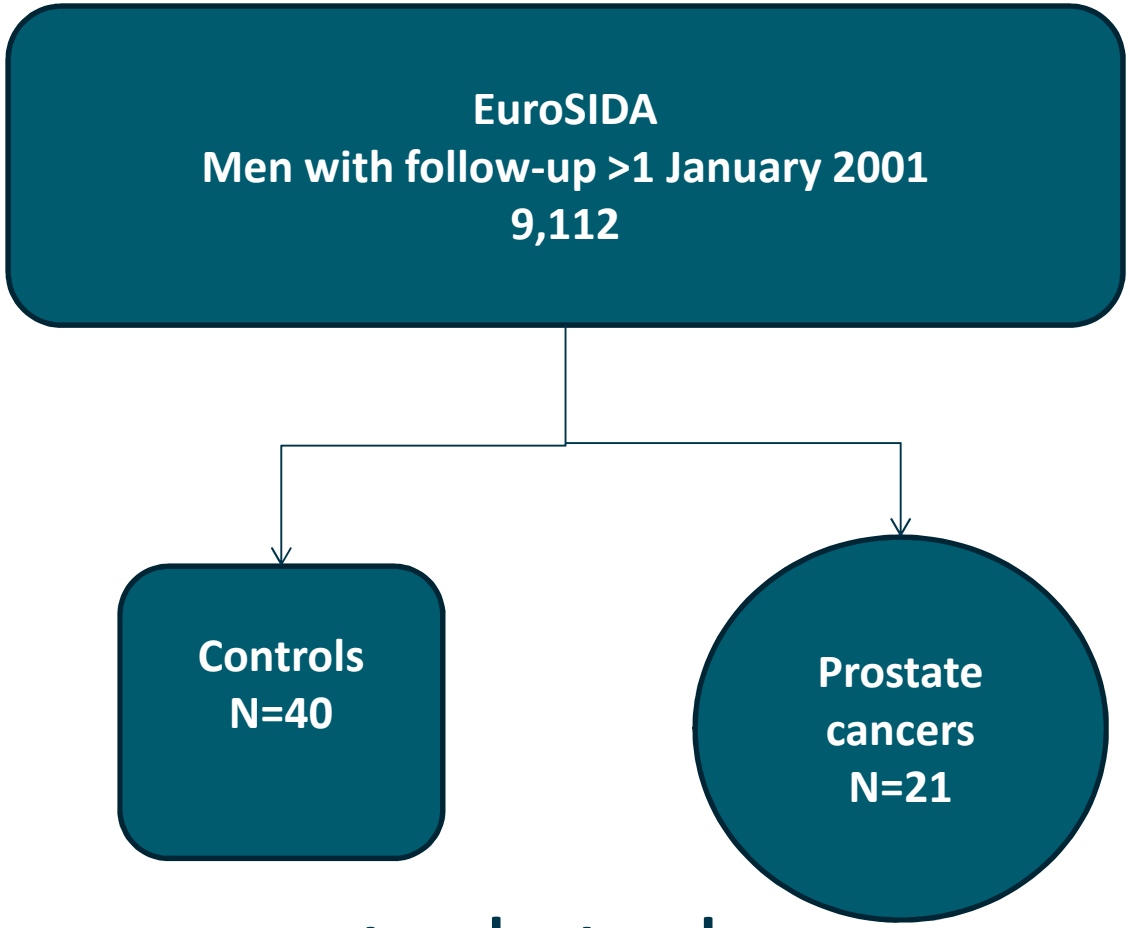
Men with follow-up >1 January 2001
9,112

Nested case control study

Optimal PSA cut off



Nested case control study

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Baseline Characteristics (first sample)

Factors	Total	Prostate cancer		P
		Cases	Controls	
	N (%)			
Total	61 (100.0)	21 (100.0)	40 (100.0)	-
Risk group				
Homosexual	47 (77.0)	17 (81.0)	30 (75.0)	0.98
Heterosexual	7 (11.5)	2 (9.5)	5 (12.5)	
IDU	2 (3.3)	0 (0.0)	2 (5.0)	
Non White ethnicity	4 (6.6)	0(0.0)	4(10.0)	0.99
Prior NADM	2 (3.3)	2 (9.5)	0(0.0)	0.99
Priorr ADM	6 (9.8)	0(0.0)	6 (15.0)	0.99
On cART	58 (95.1)	20 (95.2)	38 (95.0)	1.00
	Median (IQR)			
Age	51 (48,57)	52 (49,57)	51 (47,56)	0.18
CD4 count (cells/mm^3)	437 (243,610)	460 (260,610)	426 (230,595)	0.07
log_{10} HIV VL (copies/ml)	1.9 (1.6,2.6)	1.9 (1.6,2.6)	2.0 (1.6,2.6)	0.40

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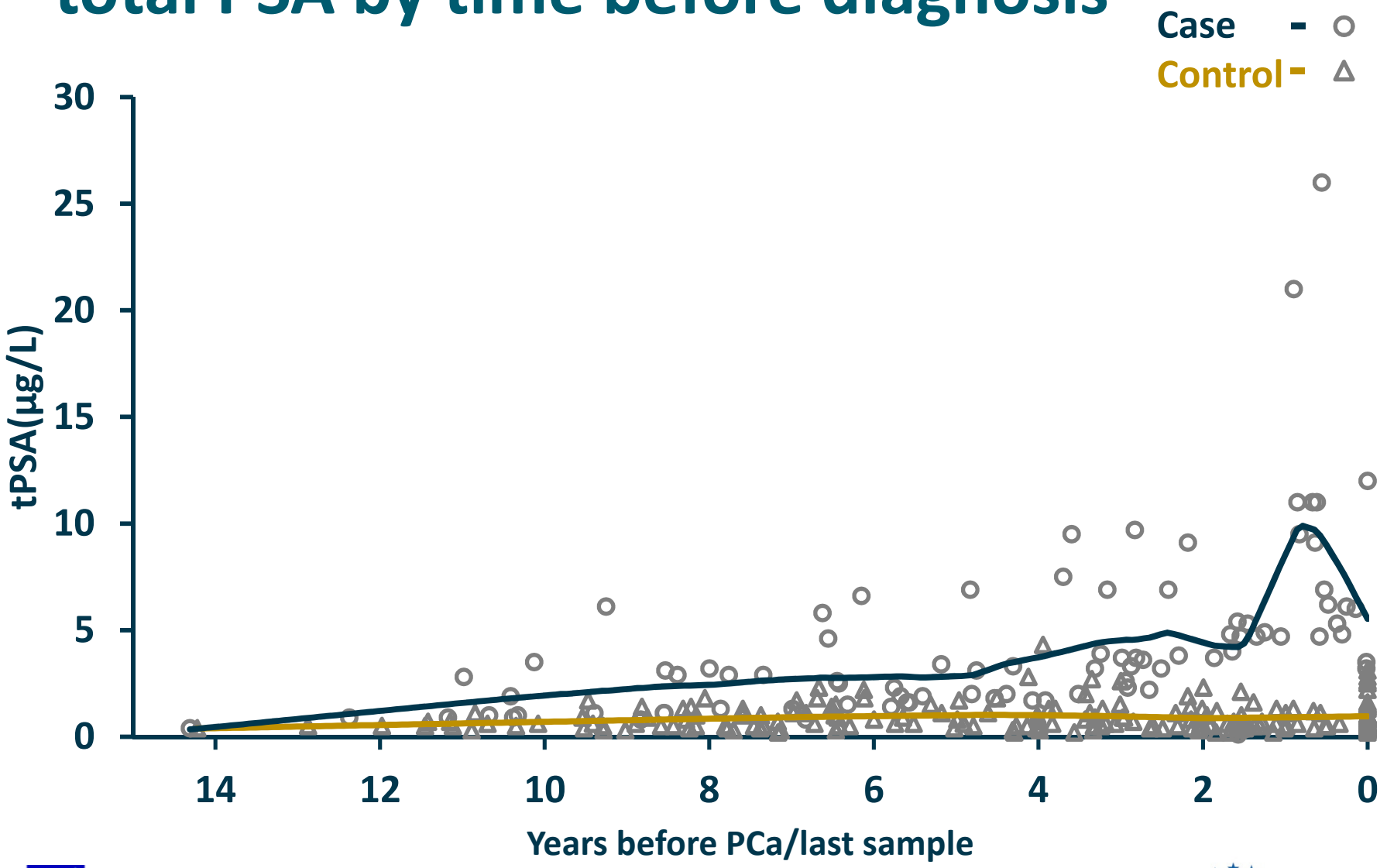
total PSA by time before diagnosis



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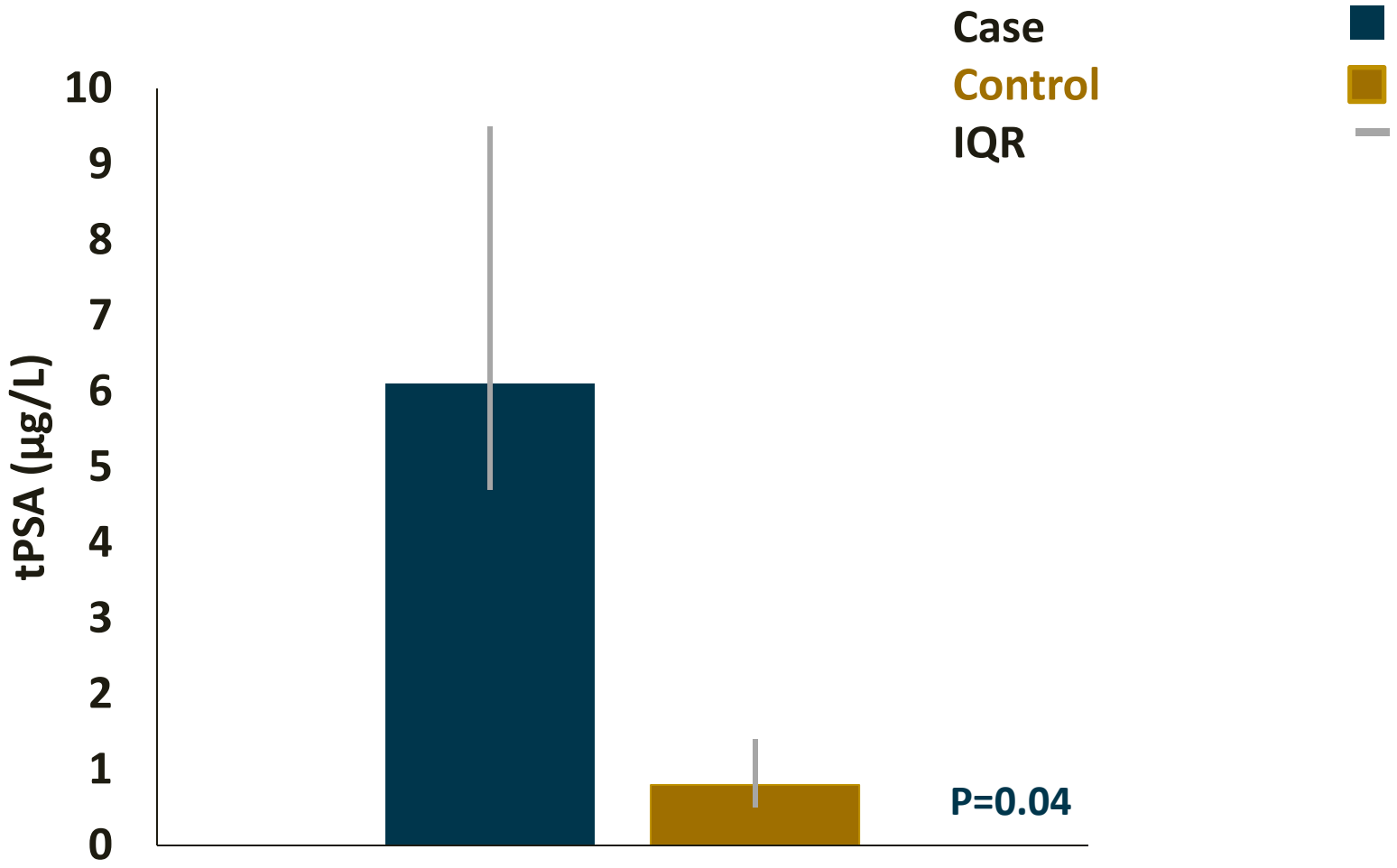
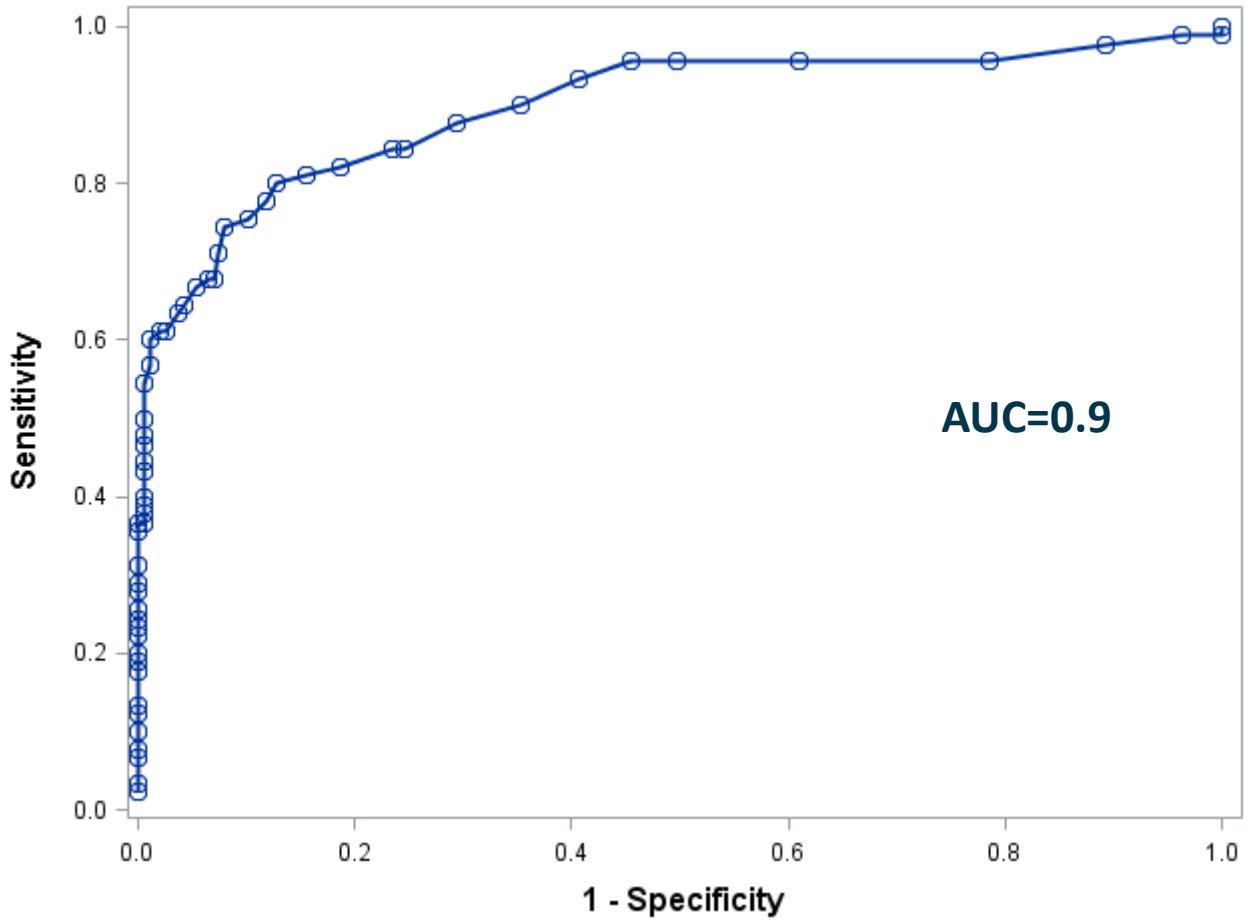
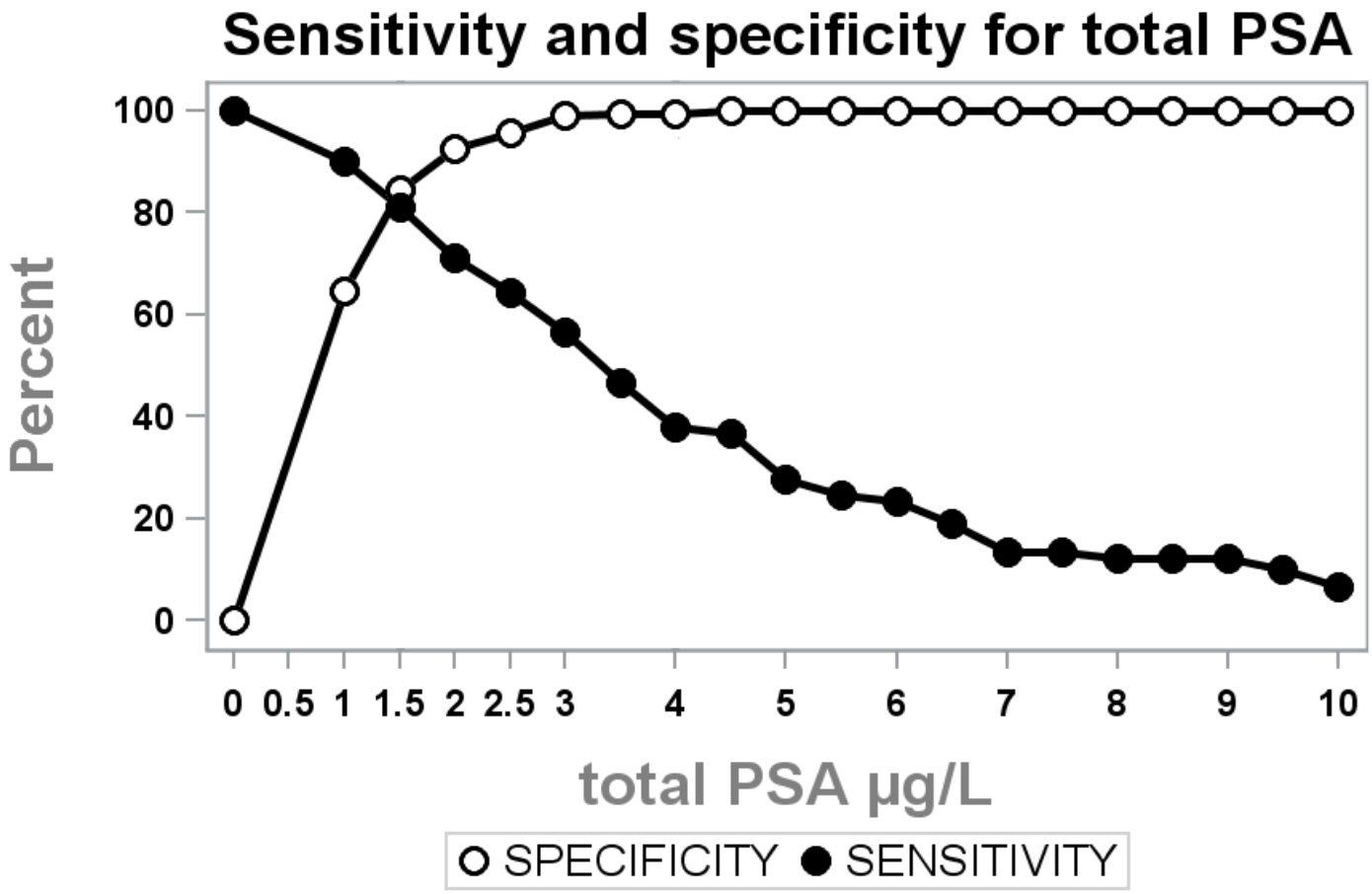
Median latest total PSA in cases and controls



ROC curve and Area Under the Curve for total PSA





Optimal cut-off for total PSA

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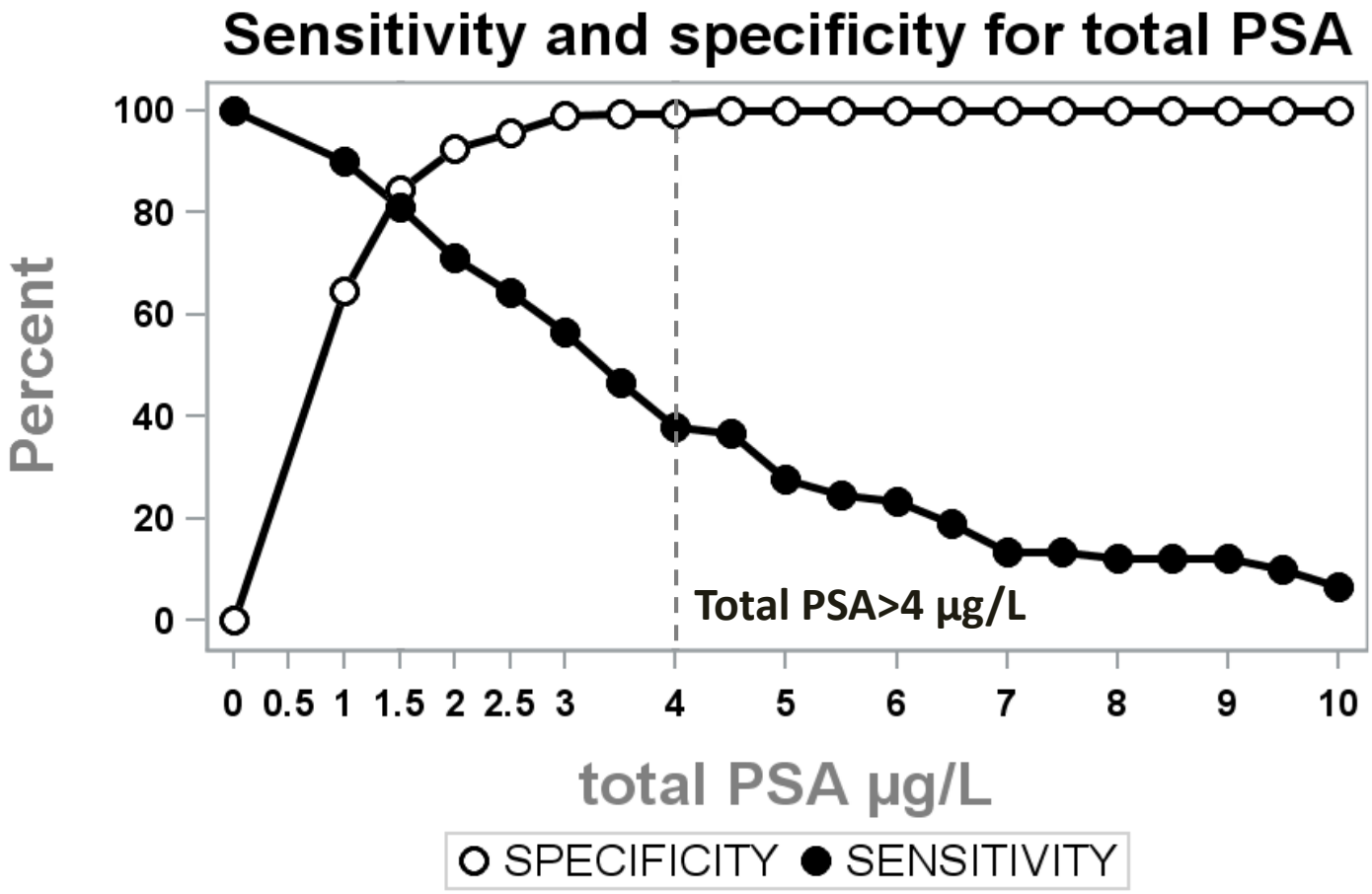
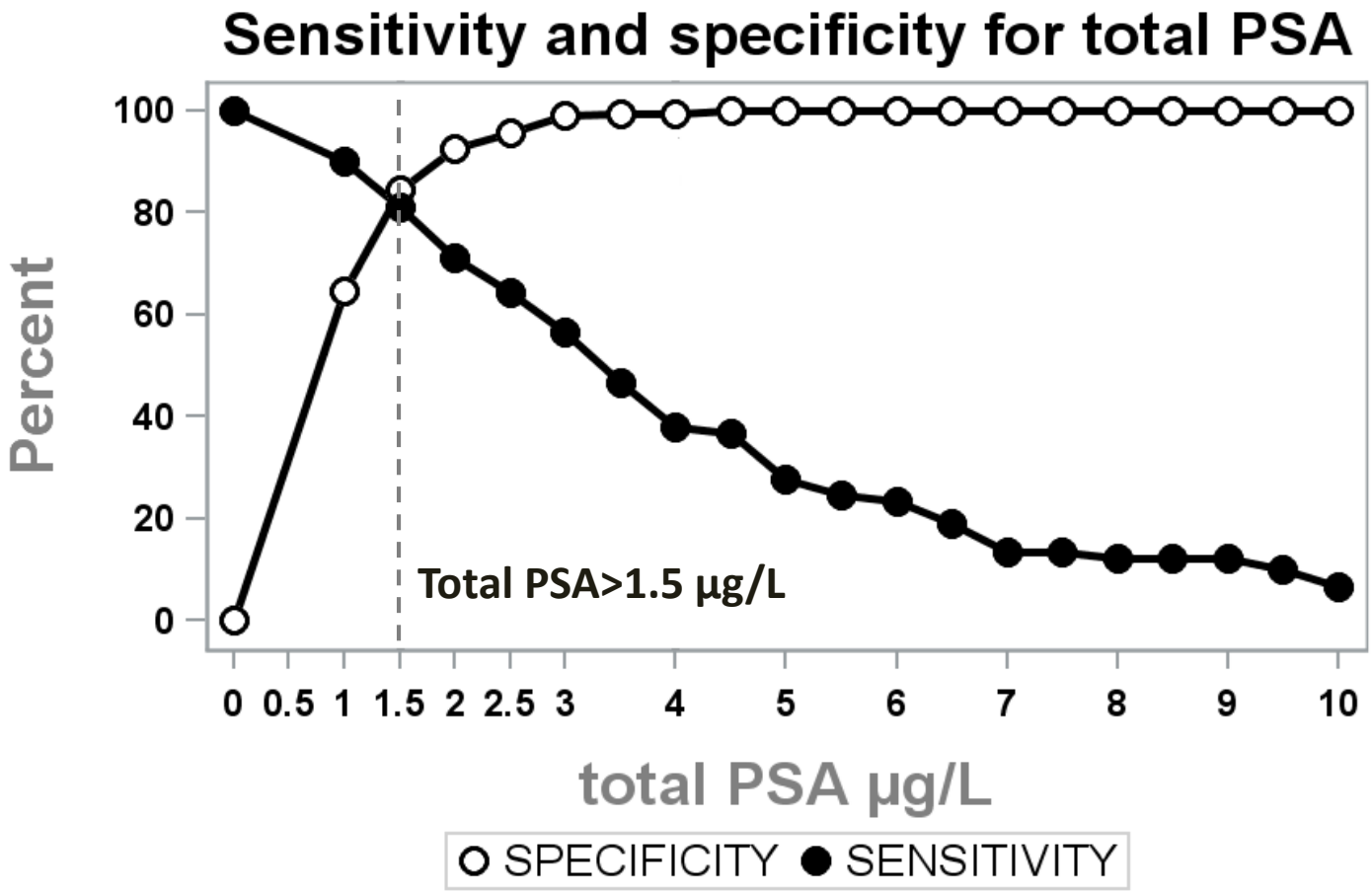


Sensitivity: 38%

Specificity: 99%

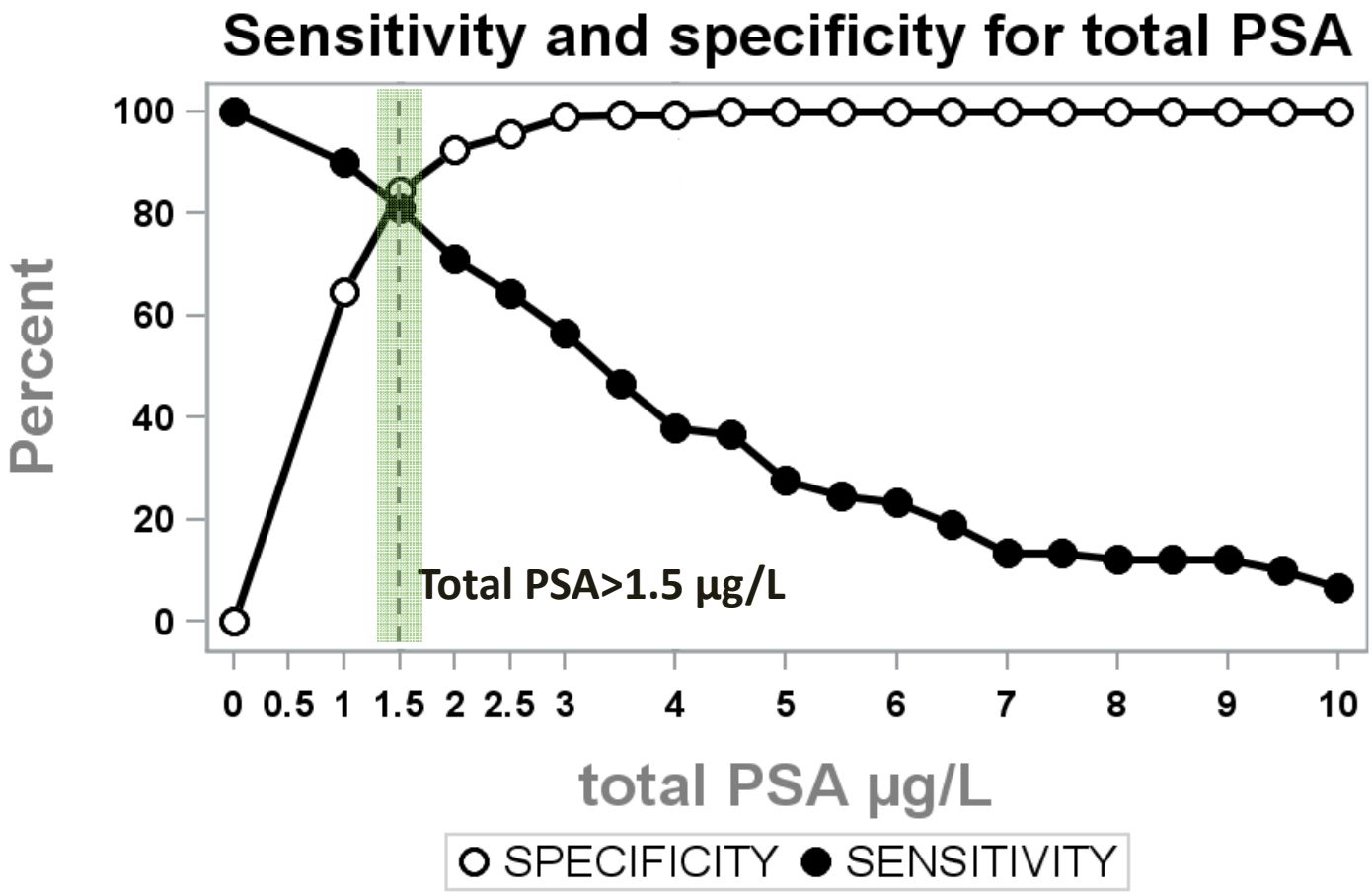
Optimal cut-off for total PSA



Sensitivity: 81%

Specificity: 84%

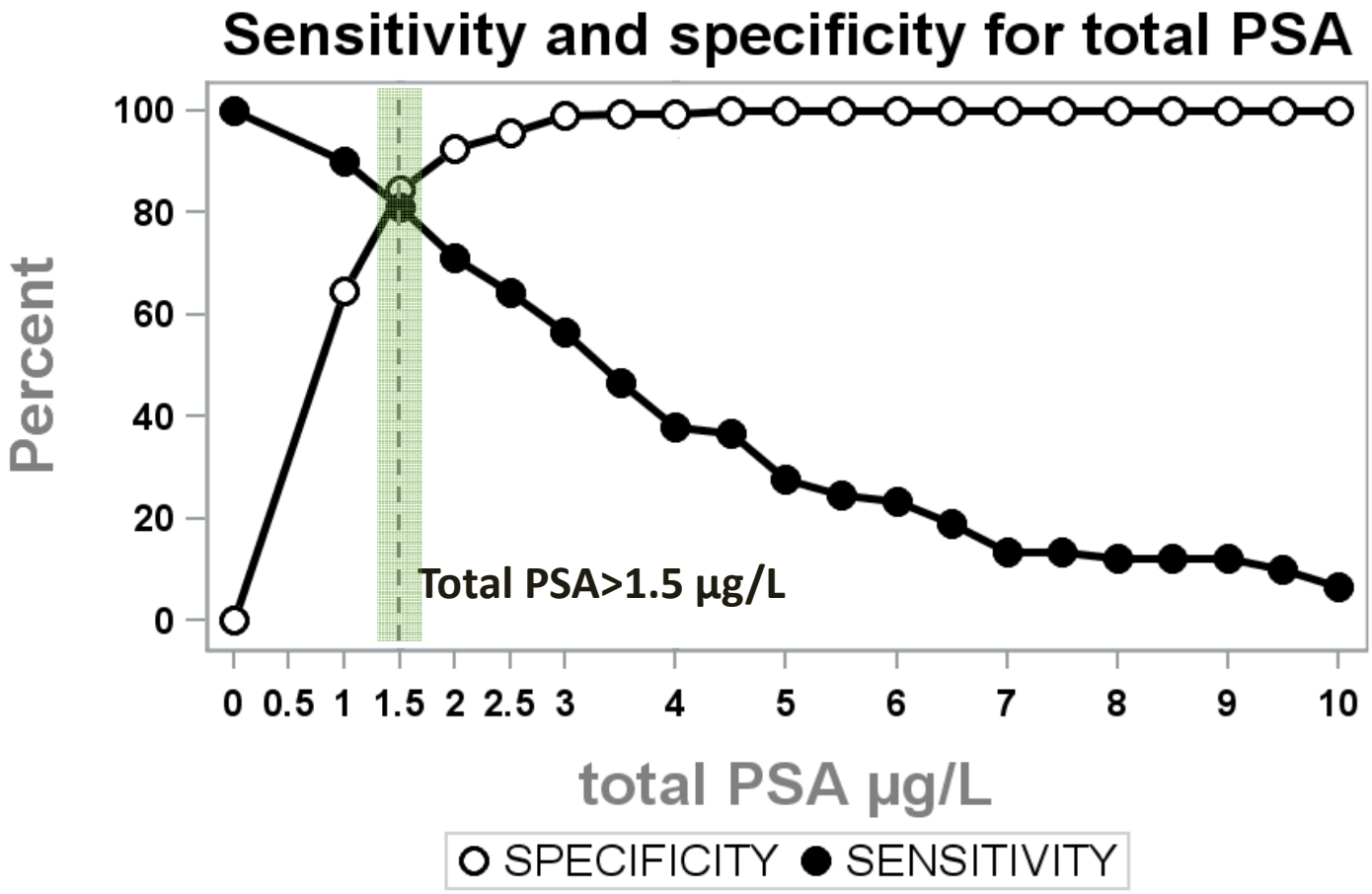
Optimal cut-off for total PSA



Sensitivity: 81%

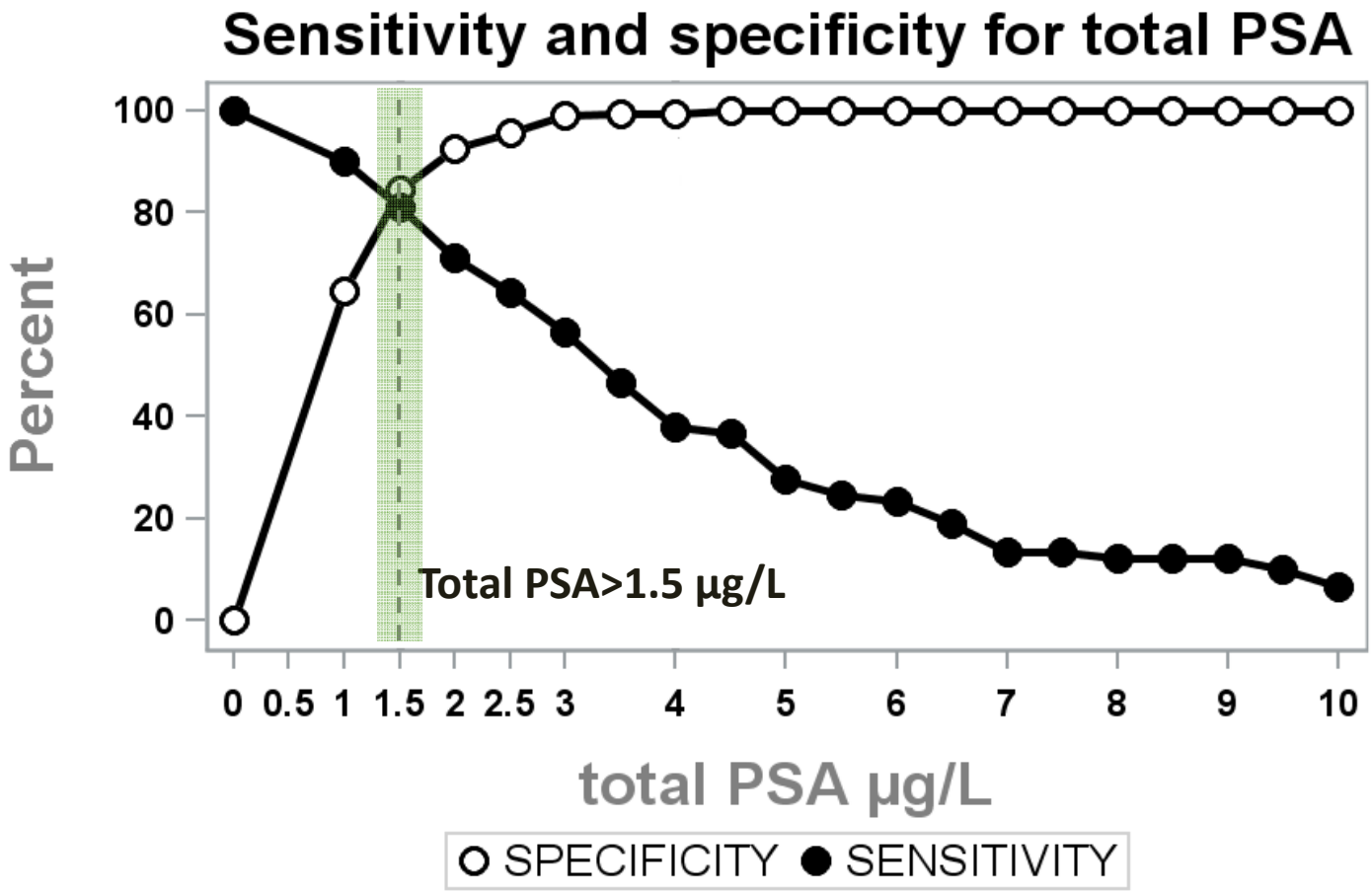
Specificity: 84%

Optimal cut-off for total PSA



Age group	Cut off	Range	Sensitivity	Specificity
< 50	1.4	1.2 – 2.8	86%	94%

Optimal cut-off for total PSA



Age group	Cut off	Range	Sensitivity	Specificity
< 50	1.4	1.2 – 2.8	86%	94%
≥50	1.5	-	81%	82%

Optimal cut-off for total PSA

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Limitations

- PSA testing not reported by all centres and under reported
- Reason for PSA testing unknown
- Small number of prostate cancers
- Observational study

Conclusions

- PSA testing in HIV+ men varied in clinics across Europe, and was particularly high in older men
- Total PSA>4µg/L to indicate high PCa risk was not sensitive in HIV+ men
- Use of the lower cut-off of PSA>1.5µg/L should be considered
- Clear guidelines on the role of PSA in PCa screening and management for HIV+ men are needed

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