12th International Conference on Drug Therapy in HIV Infection

Predictive value of Prostate Specific Antigen for prostate cancer
A nested case control study in EuroSIDA

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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.

Aims

"What is the predictive value of PSA in HIV+ men?"

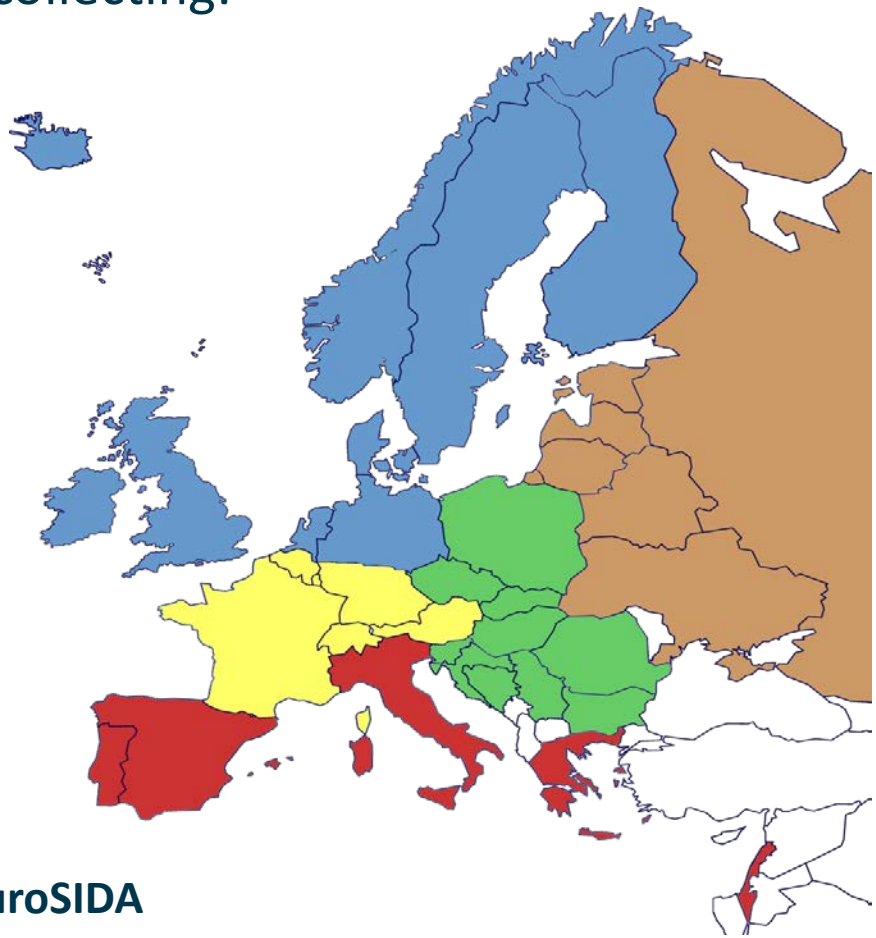
Changes in markers prior to prostate diagnosis

How well does elevated PSA predict future prostate cancer?

Appropriateness of PSA>4 µg/mL

Methods - EuroSIDA

EuroSIDA is a large prospective cohort with 18,794 patients from 108 clinics in 34 European countries, Israel and Argentina. Regularly collecting:



EuroSIDA

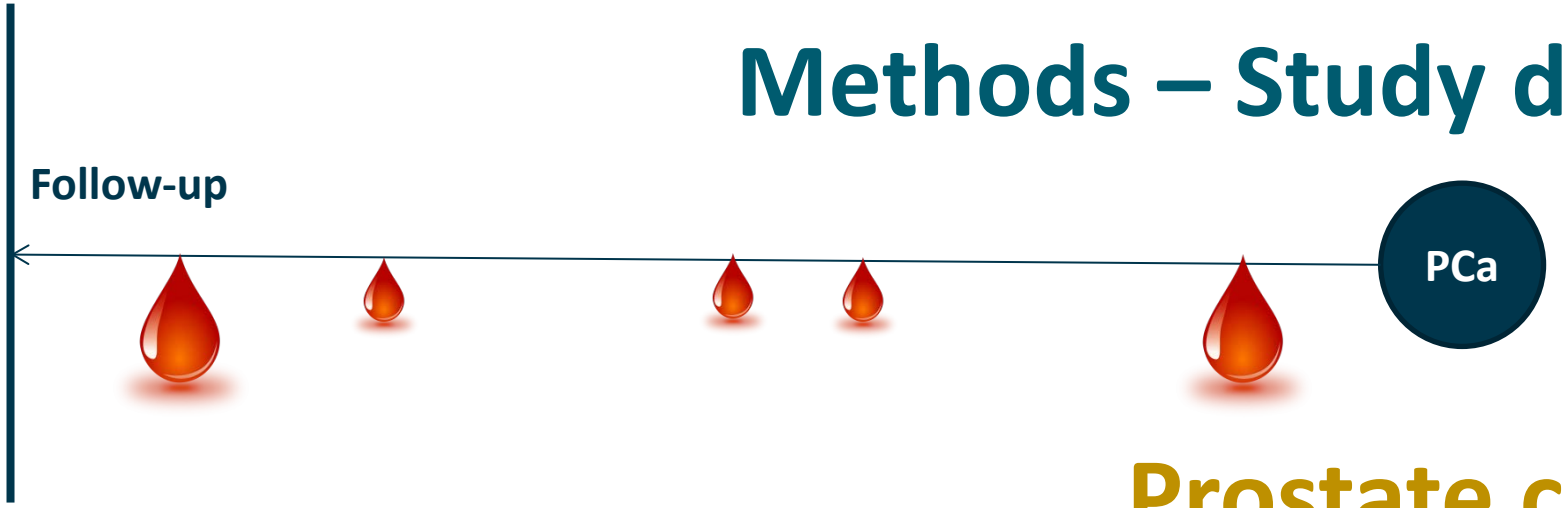
- CD4 counts, HIV viral loads
- Non-AIDS events (since 2001)
- Prospectively stored plasma samples.

UCL

Methods – Study design

Nested case control study

Methods – Study design



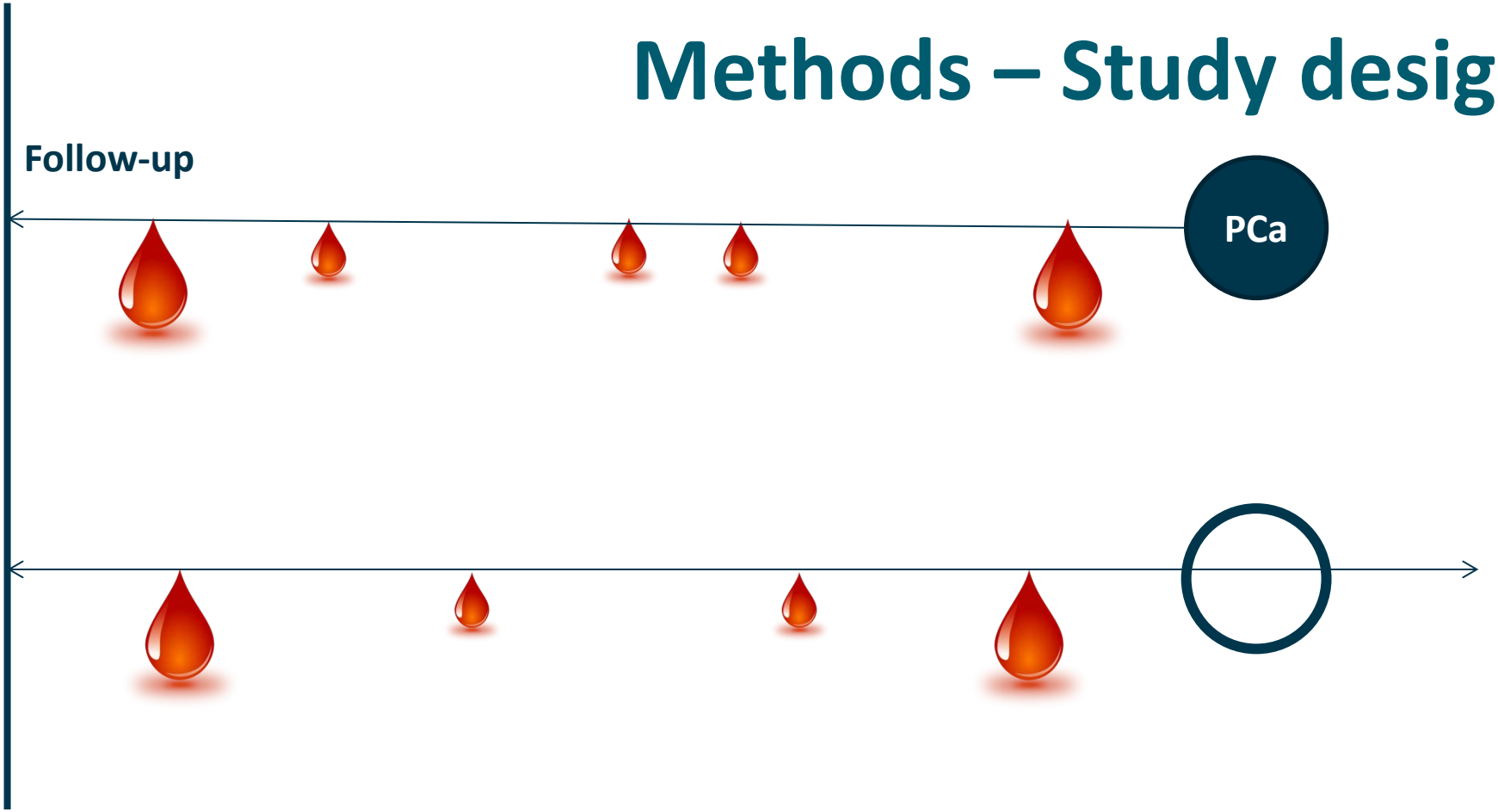
Prostate cancer

After 1 Jan 2001

Prior plasma sample

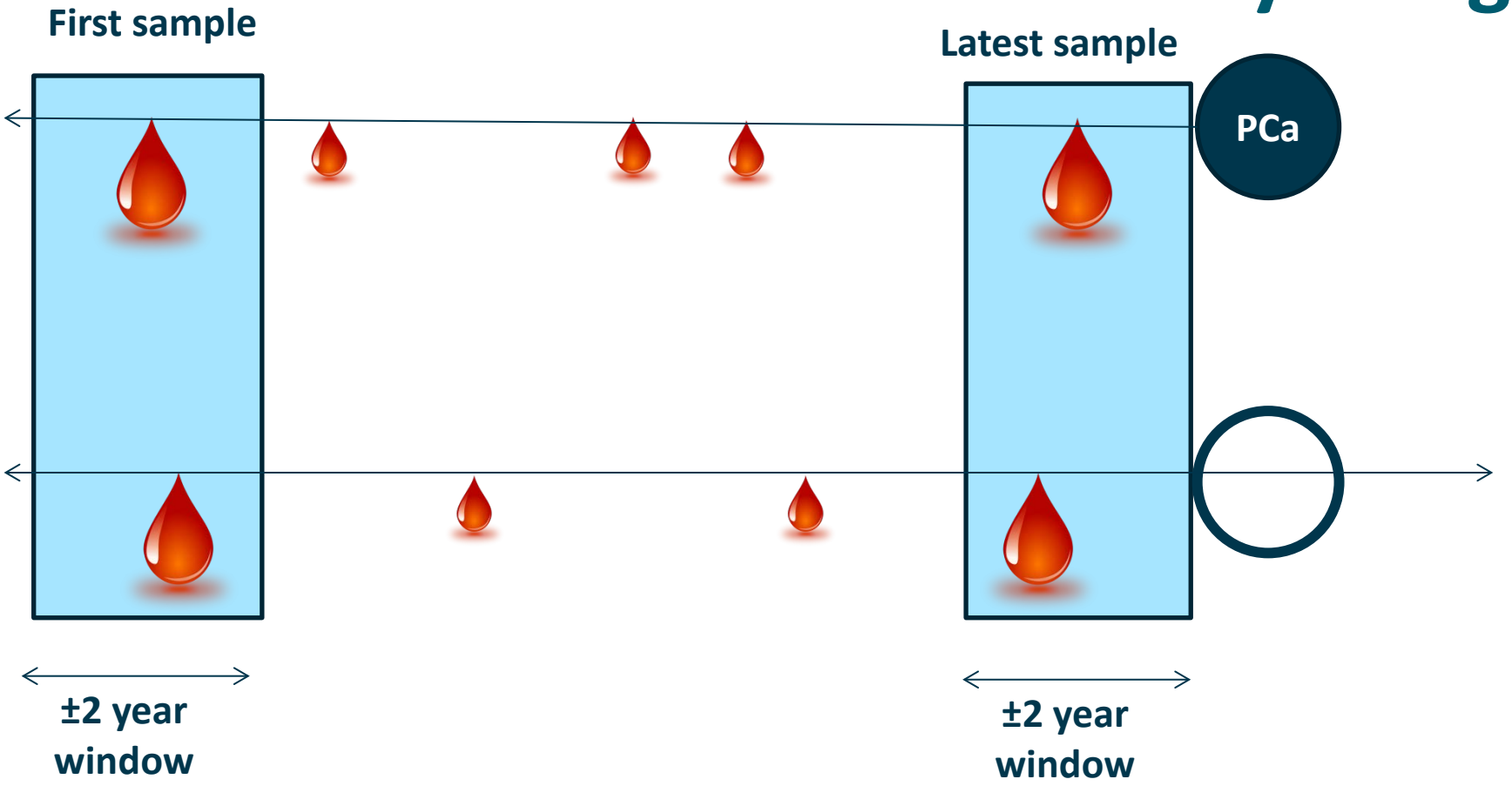
Nested case control study

Methods – Study design



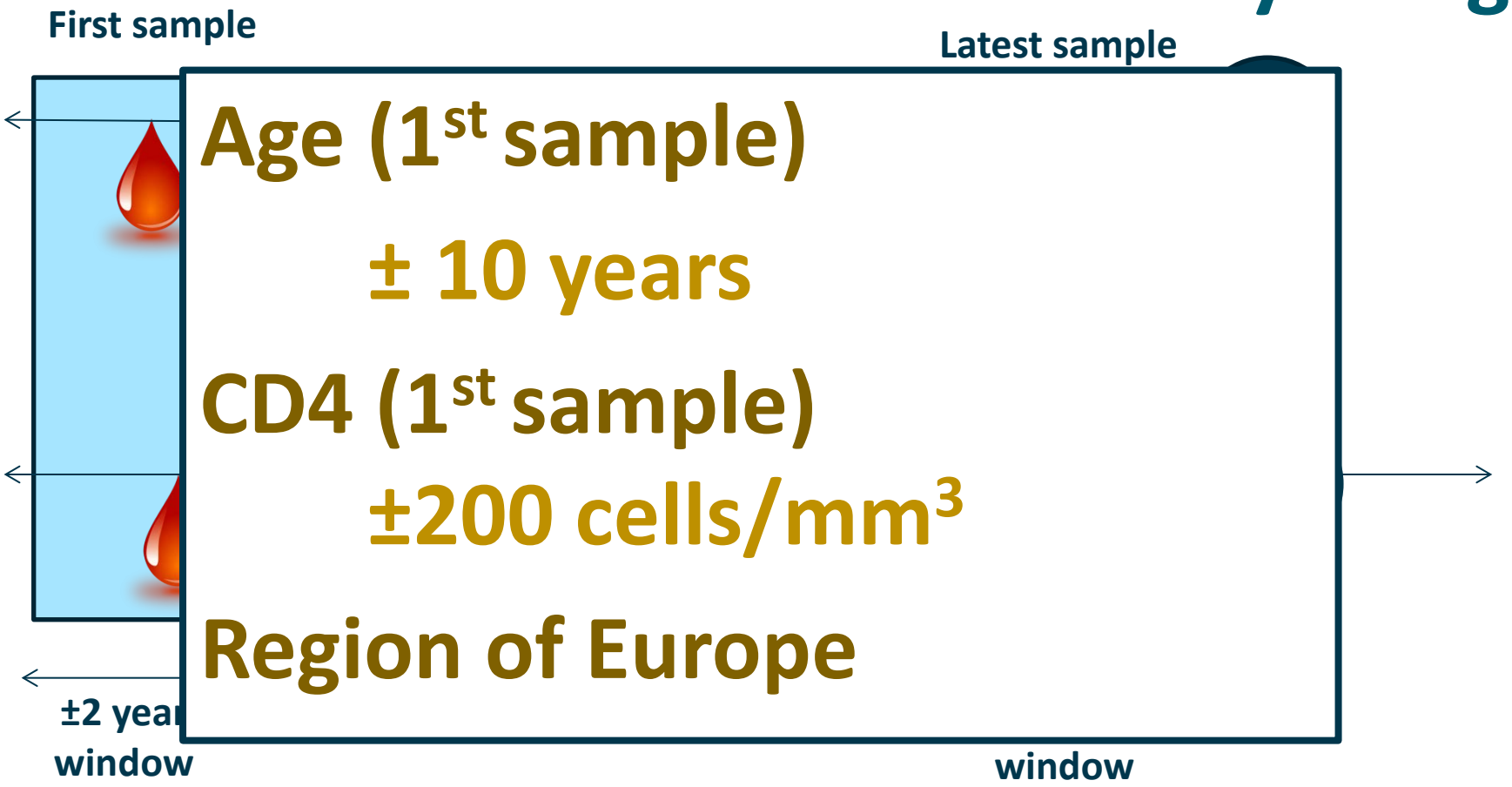
Nested case control study

Methods – Study design



Nested case control study

Methods – Study design



Nested case control study

Methods – Samples

All samples prior to diagnosis (or equivalent date in controls)

Total PSA

Free PSA

Testosterone

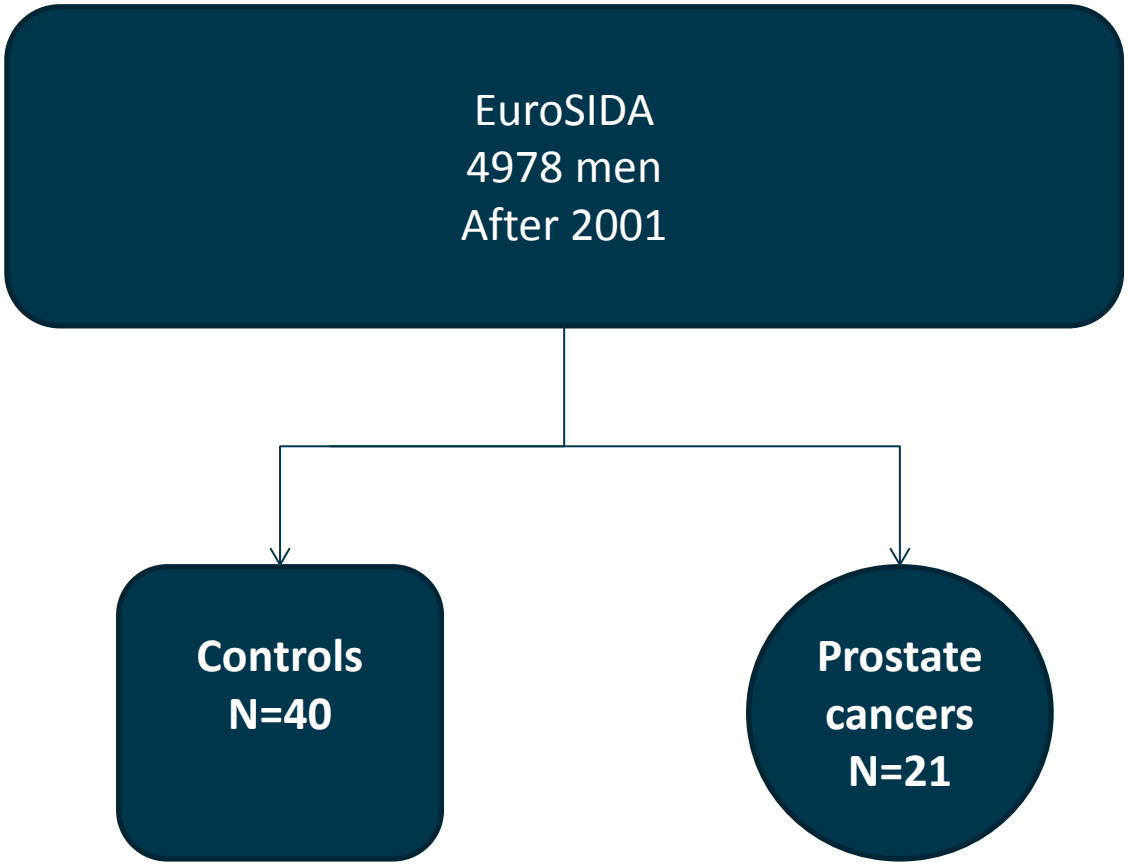
Sex hormone binding globulin (SHBG)

Methods – Study design

EuroSIDA
4978 men
After 2001

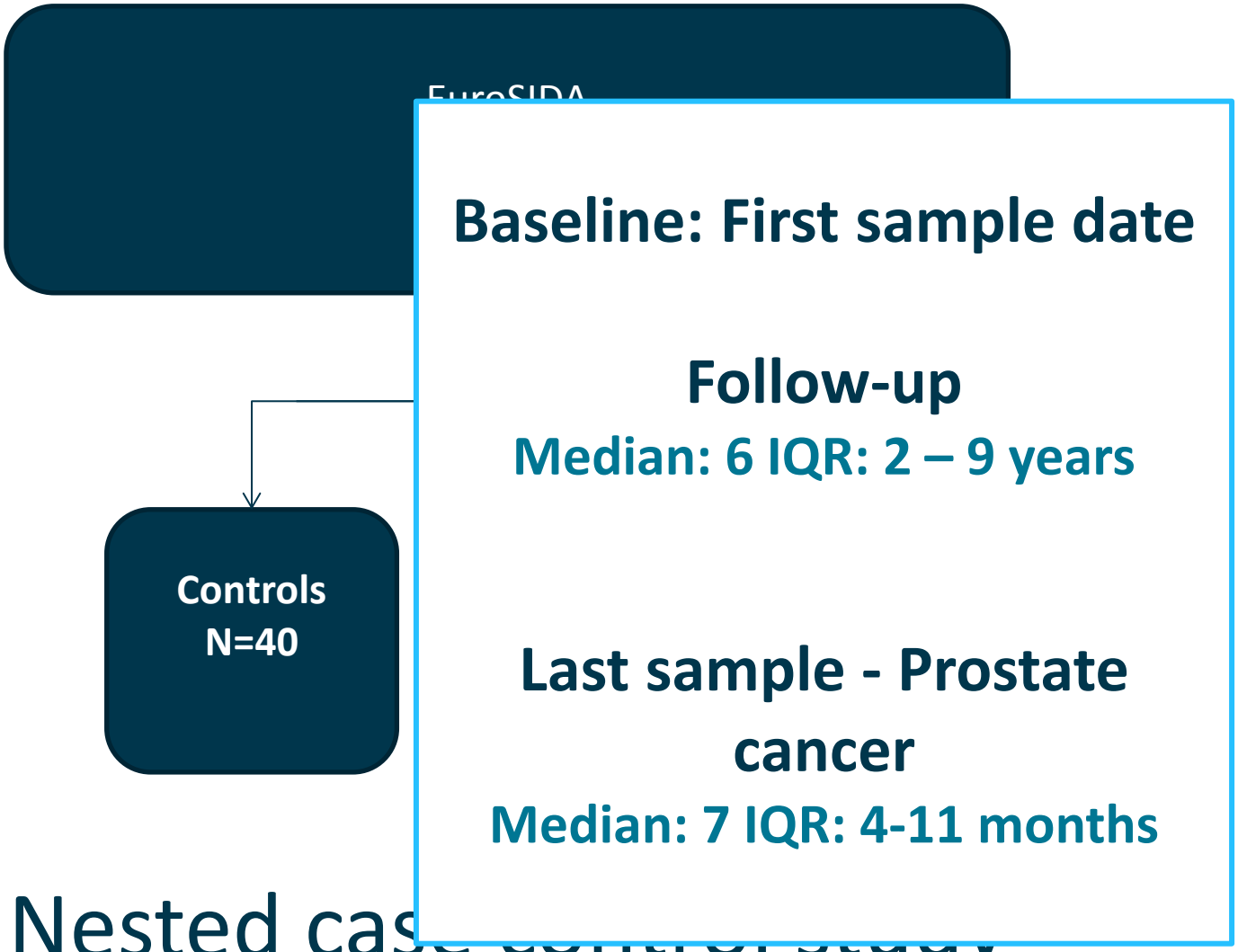
Nested case control study

Methods – Study design



Nested case control study

Methods – Study design

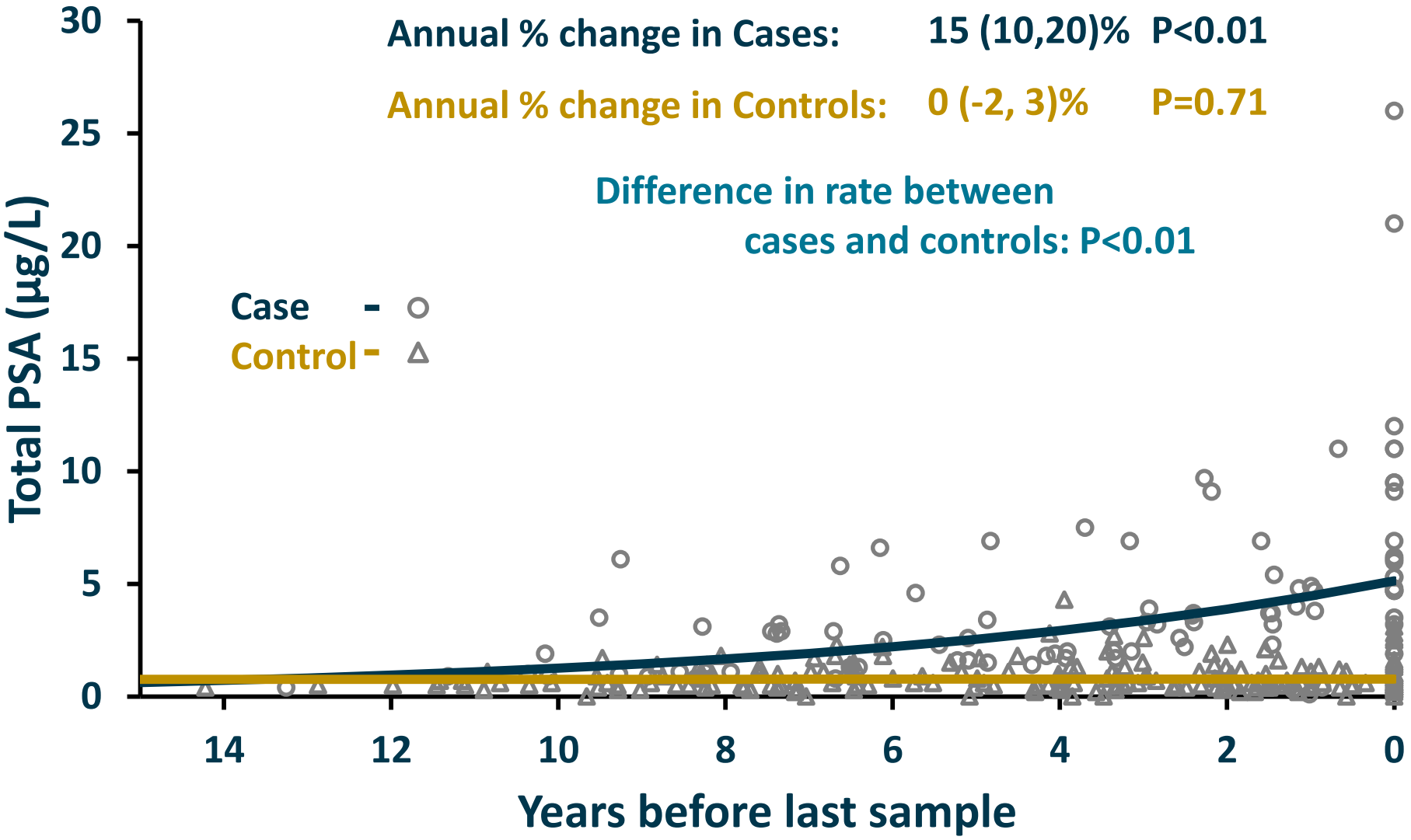


Nested case control study

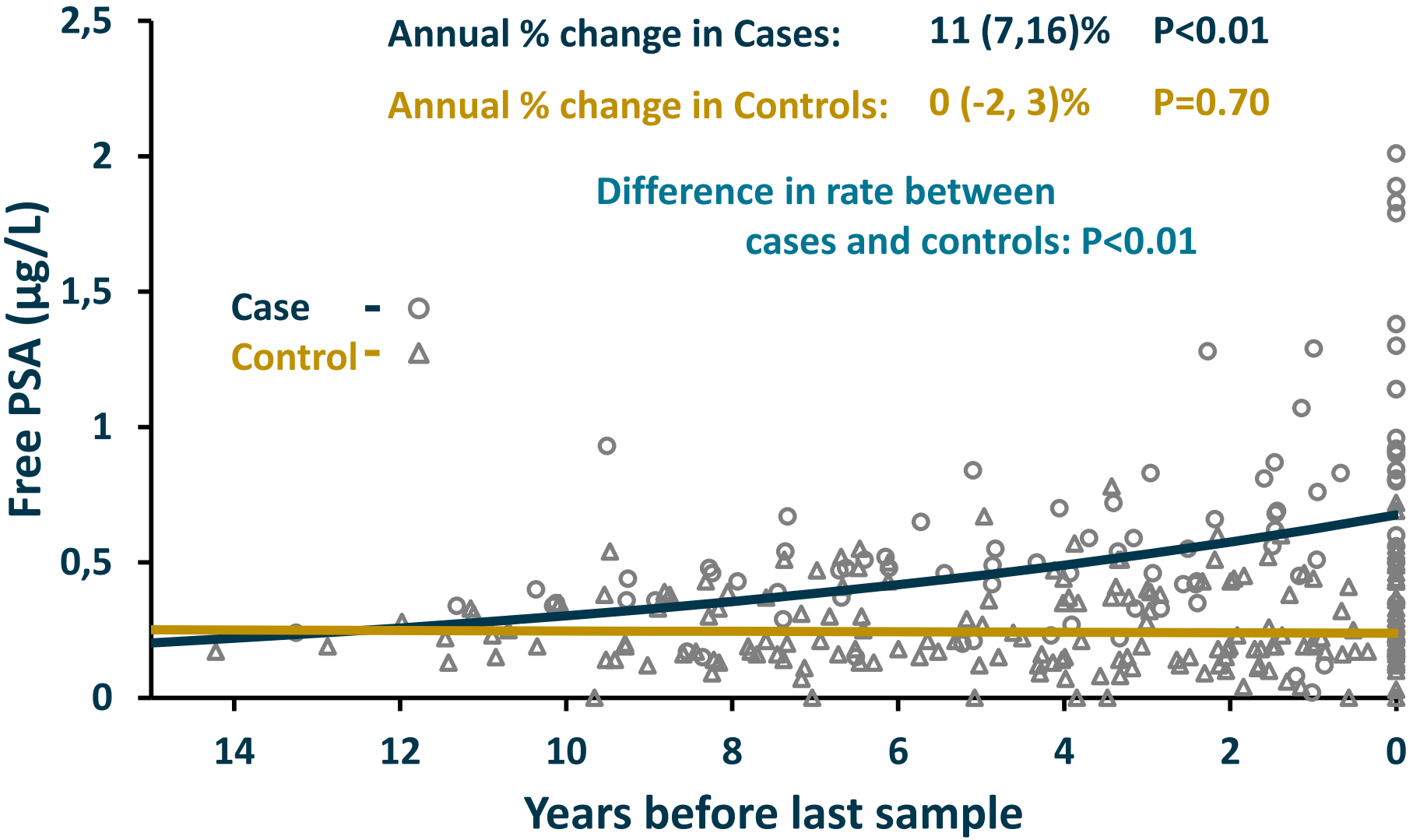
Baseline characteristics (first sample)

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)	
White ethnicity	57 (93.4)	21 (100.0)	36 (90.0)	0.99
No prior NADM	59 (96.7)	19 (90.5)	40 (100.0)	0.99
No prior ADM	55 (90.2)	21 (100.0)	34 (85.0)	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

total PSA by time before diagnosis



Free PSA by time before diagnosis

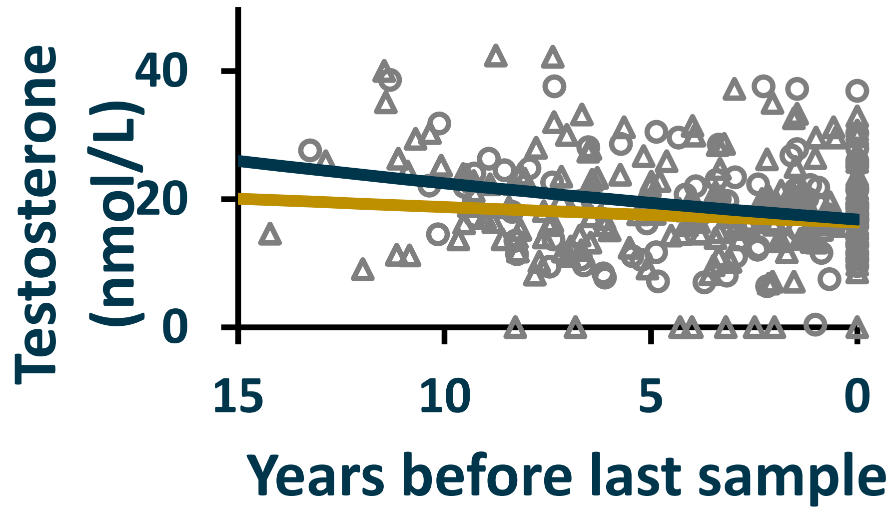


Testosterone & SHBG by time before diagnosis

% change in Cases: -2 (-4, 0)% P=0.13

% change in Controls: -2 (-3, -1)% P<0.01

Difference in rate between cases and controls: P=0.96



Case - ○

Control - △

Testosterone & SHBG by time before diagnosis

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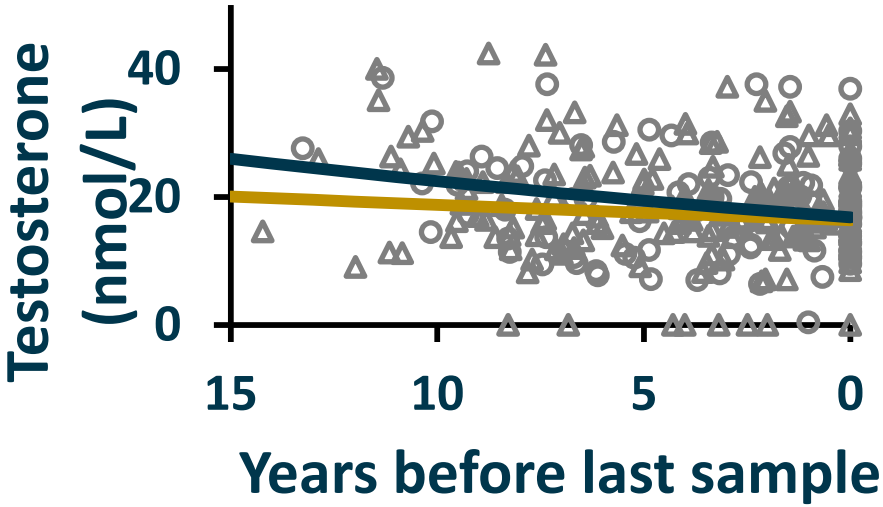
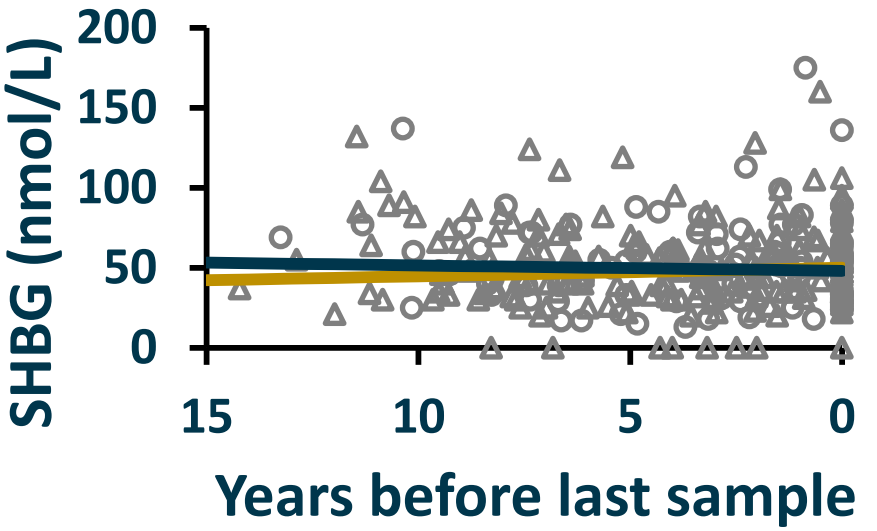


% change in Cases: 0 (-1,2)% P=0.82

% change in Controls: 0 (-2, 2)% P=0.65

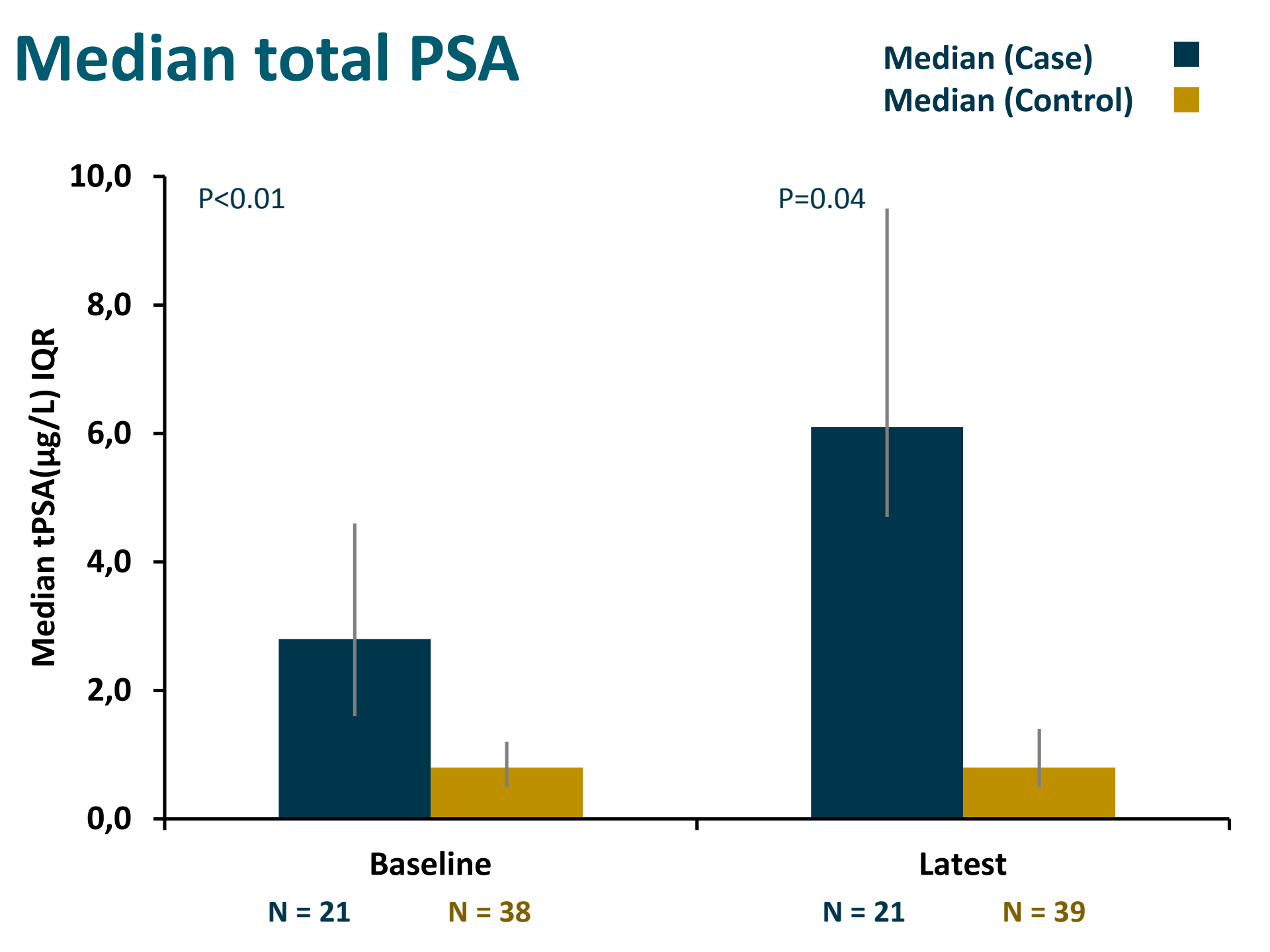
Difference in rate between cases and controls: P=0.58



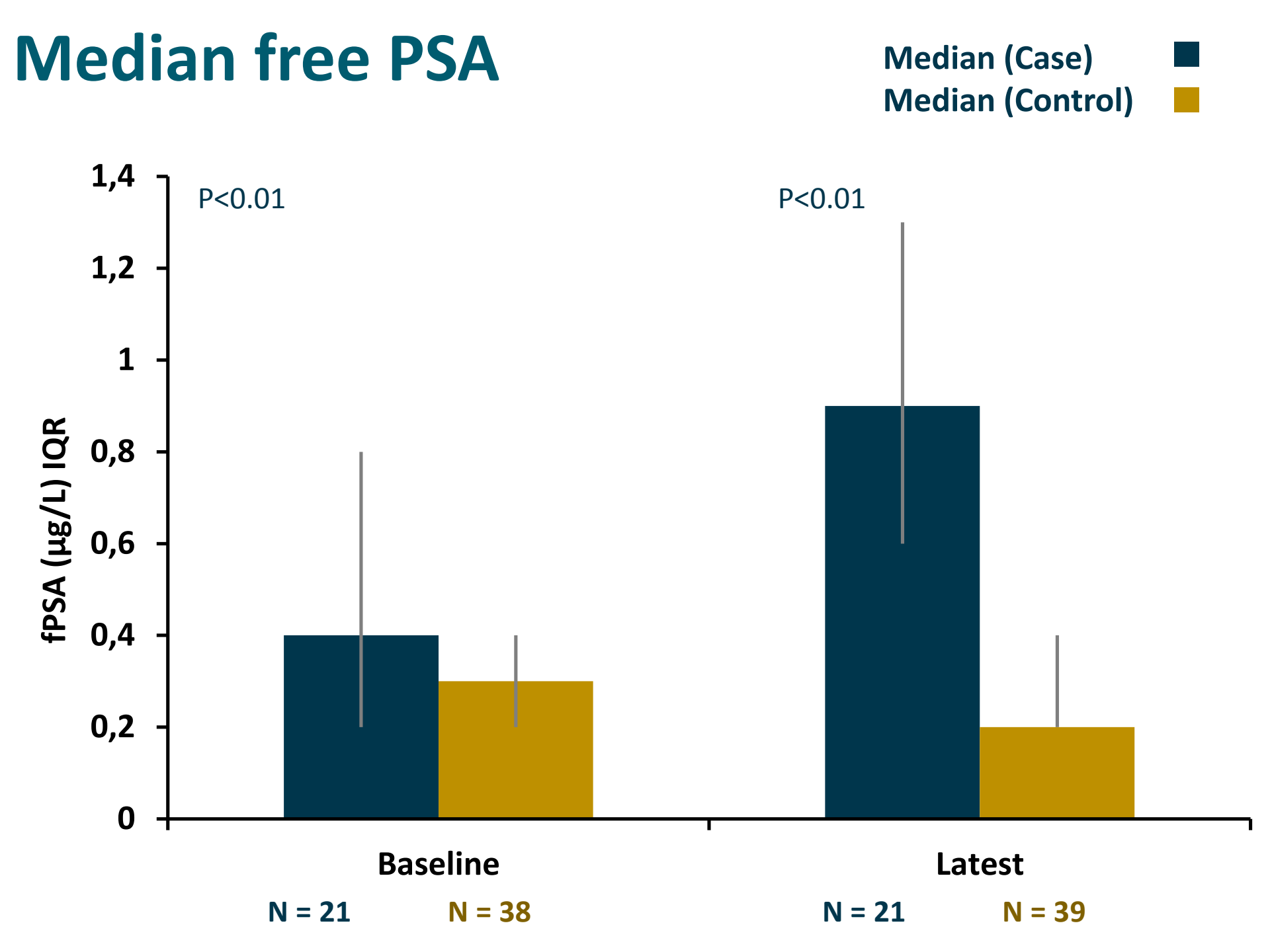
Case - ○

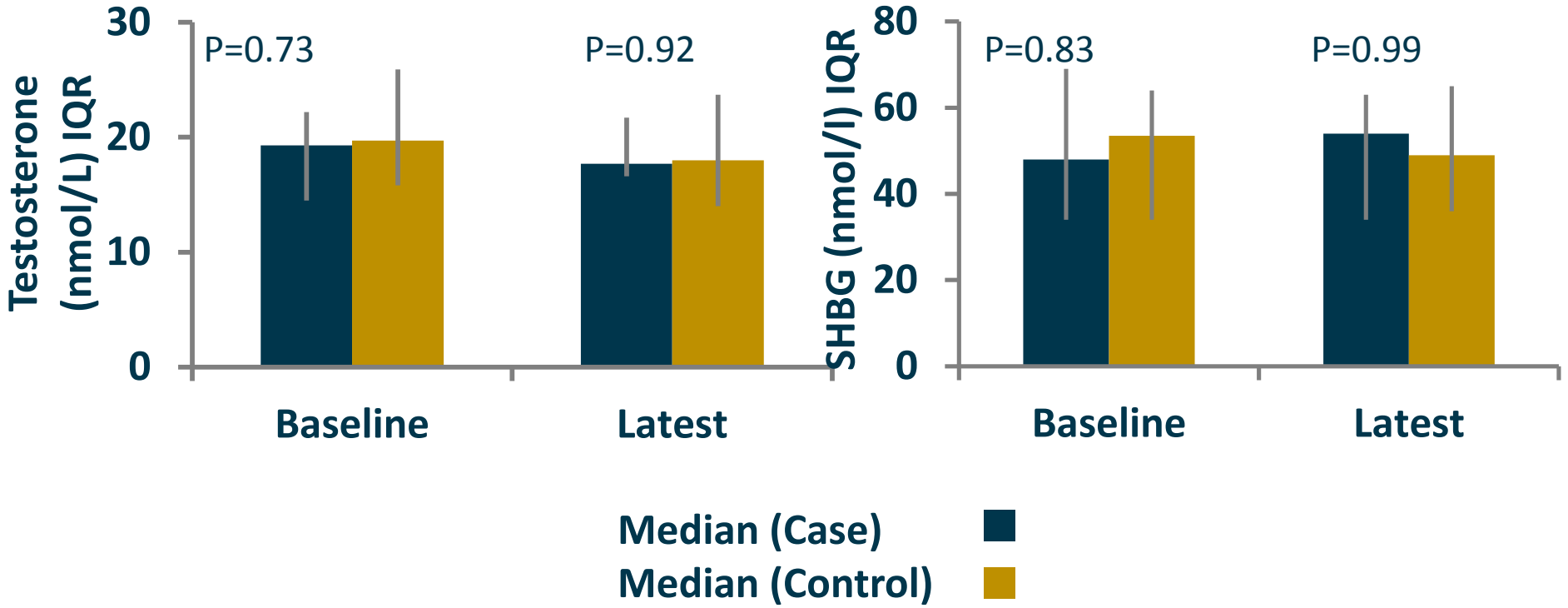
Control - △

Median total PSA



Median free PSA

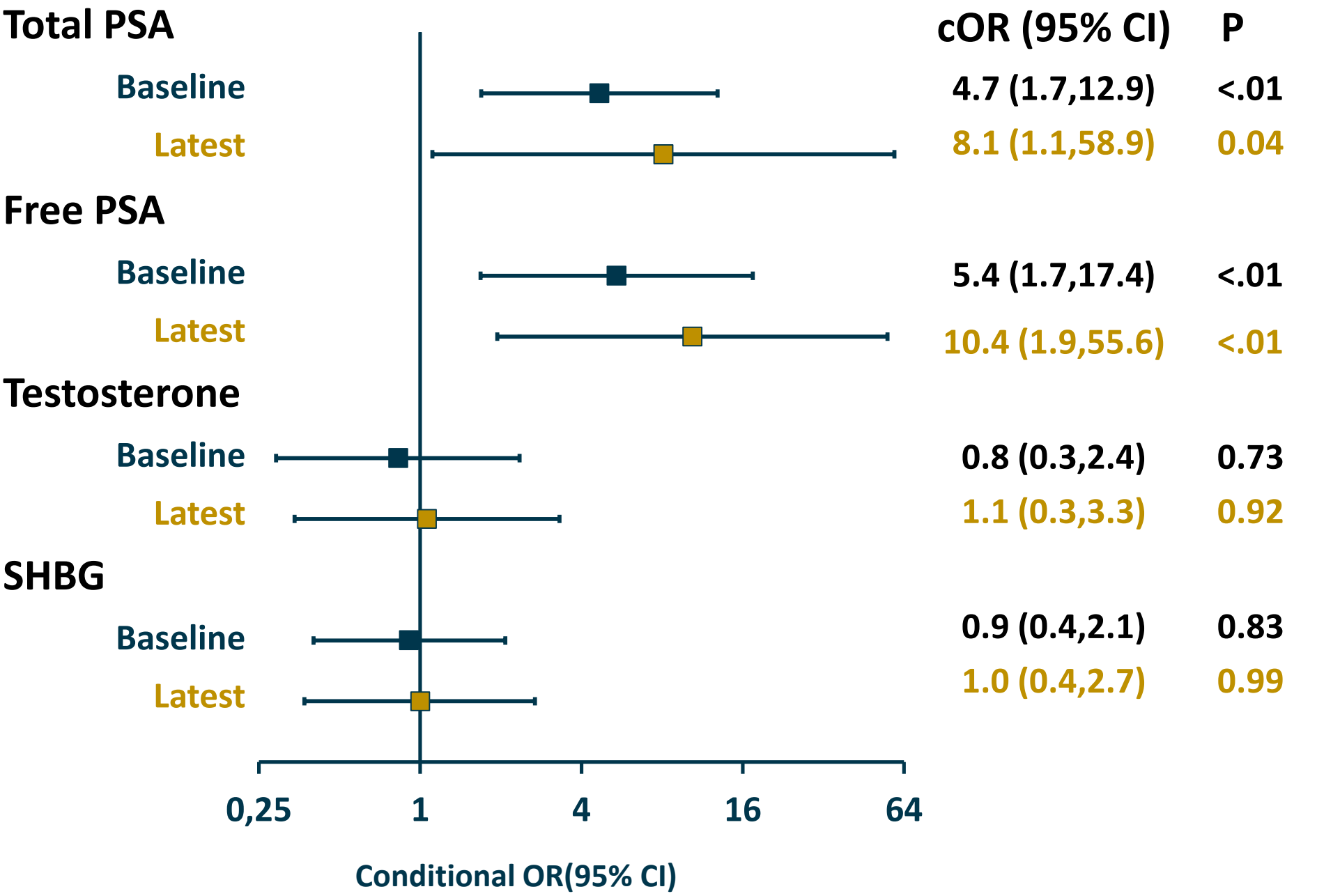




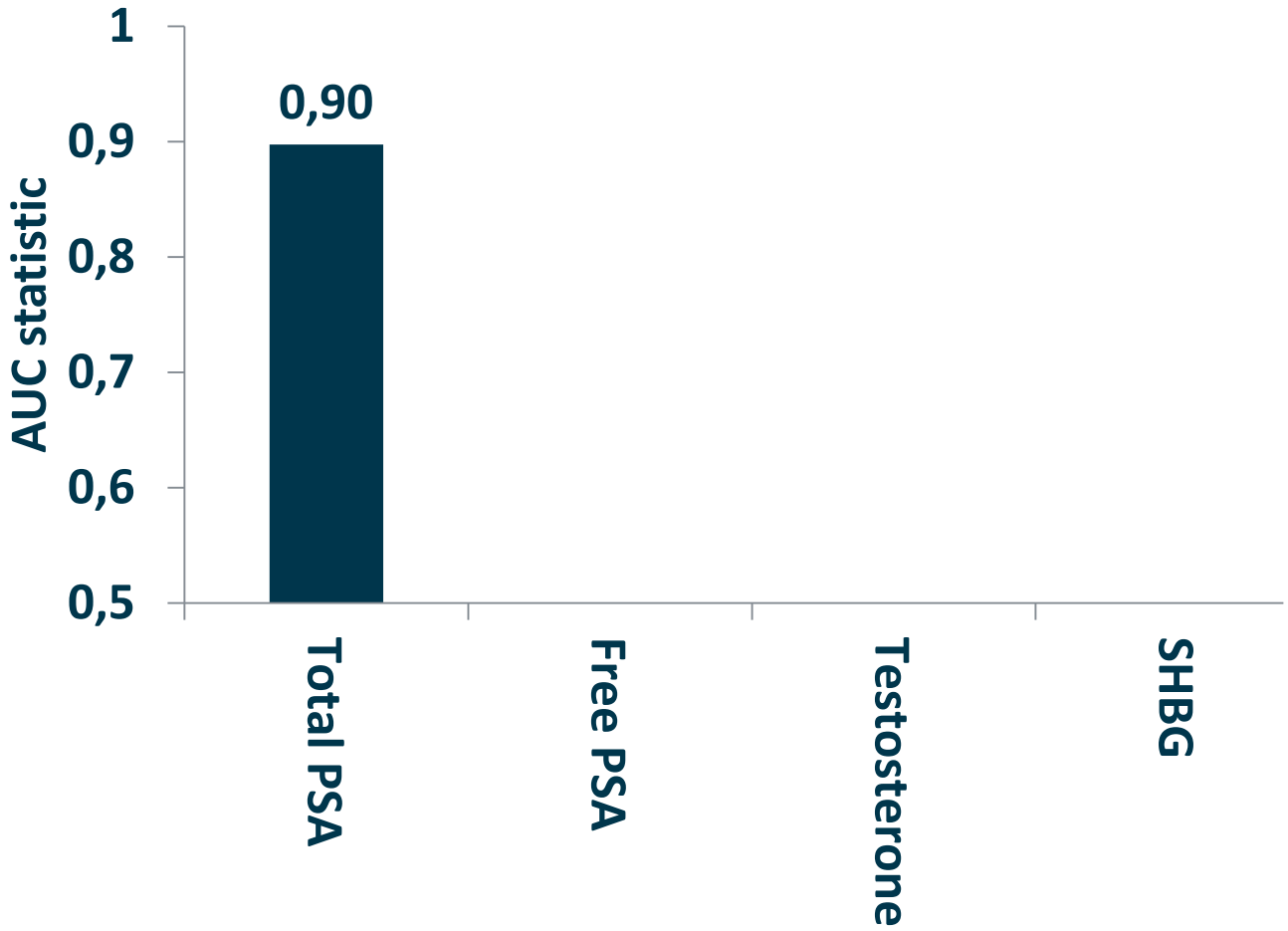
Median testosterone and SHBG

Baseline: cases = 21, controls = 38; Event: cases = 21, controls = 39.

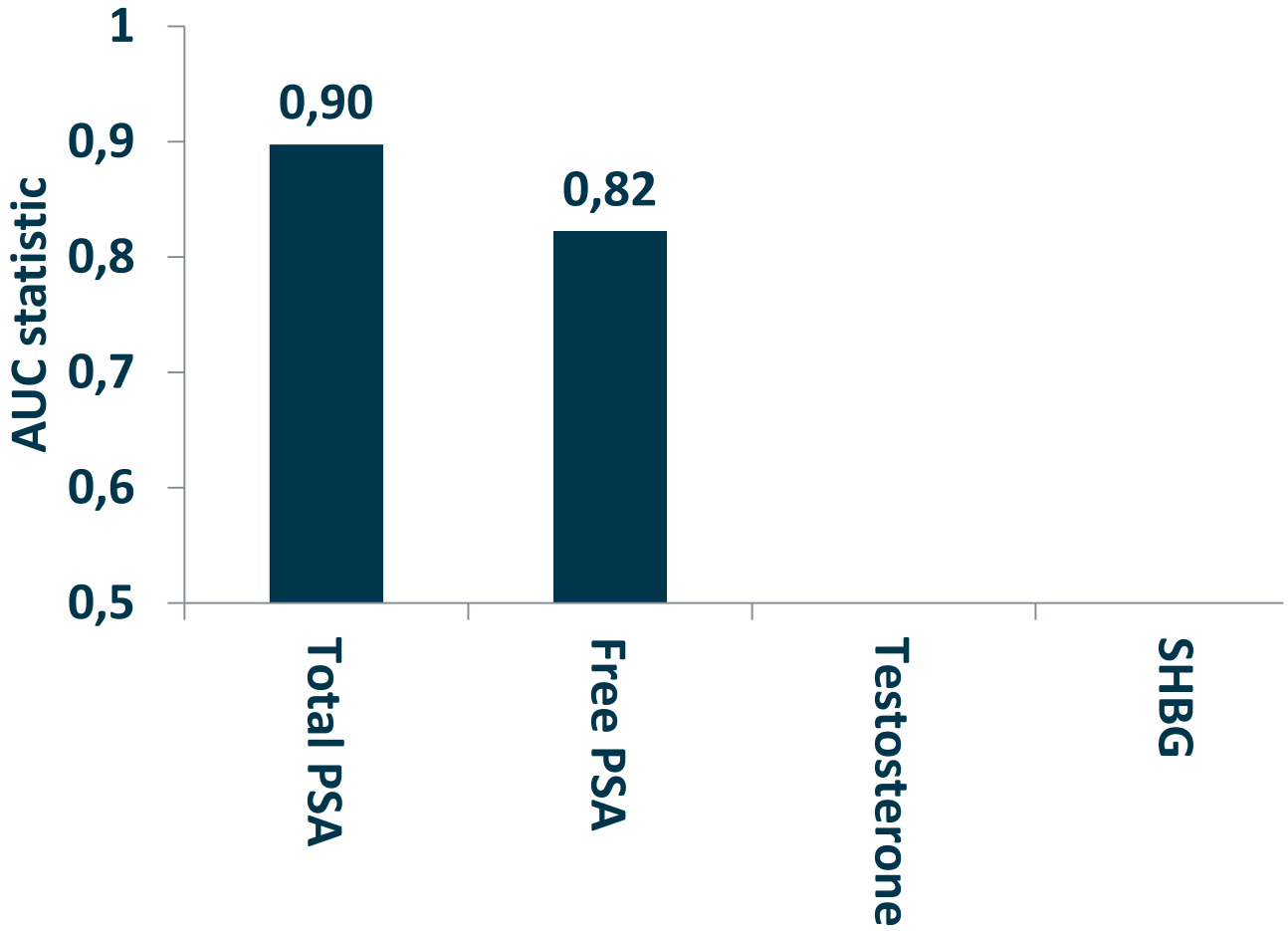
Oddsratio of prostate cancer for 2x higher marker



Predictive value of markers



Predictive value of markers



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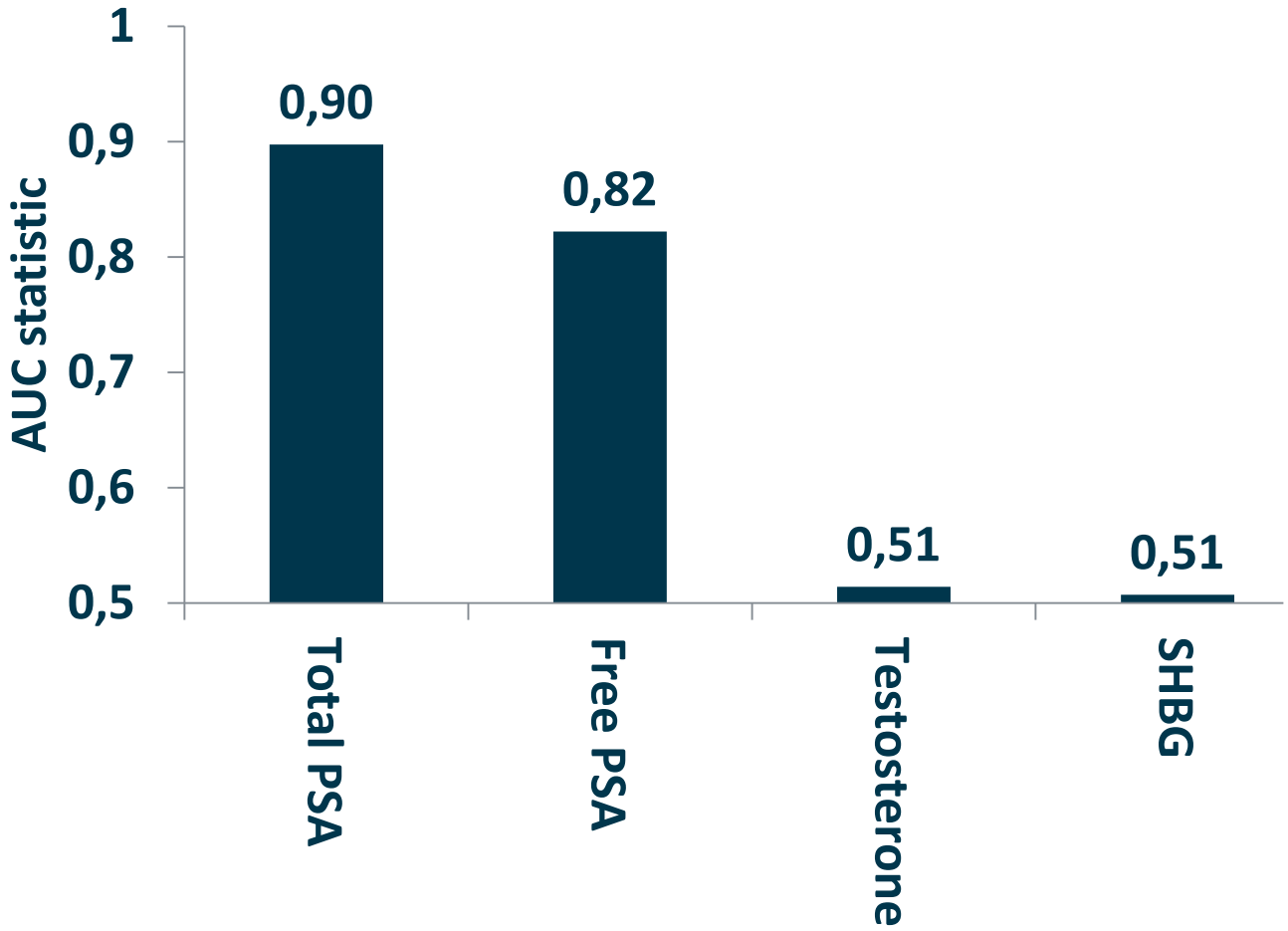
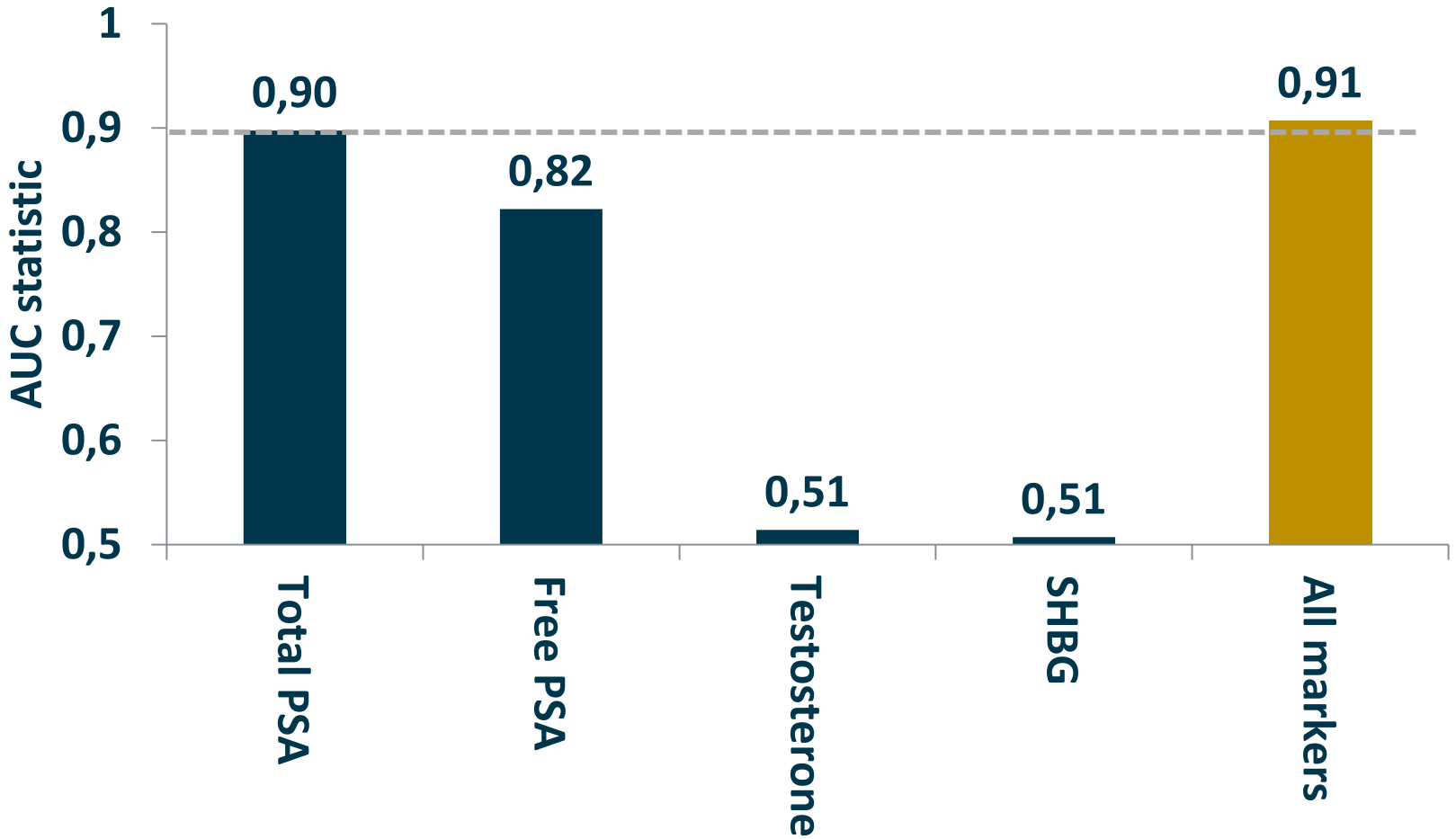
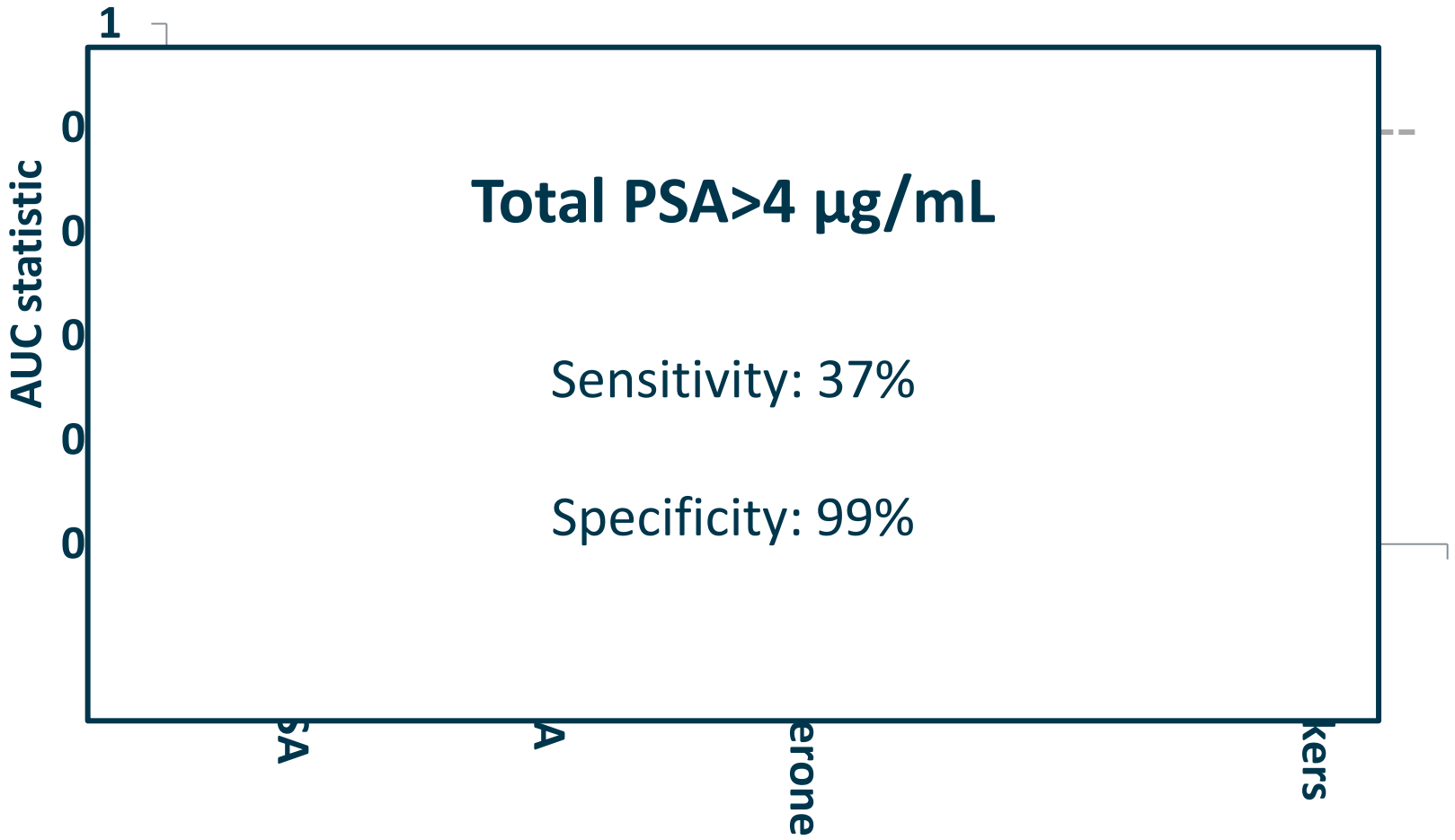


Predictive value of markers



Predictive value of markers



Limitations

- Small number of prostate cancers
- Other markers: ProPSA
- No information on cancer treatment

Strengths

- Many prostate cancers (relatively)
- Prospective and independent plasma samples

Conclusions

PSA highly predictive of PCa in HIV+ men

PSA is elevated more than 5 years before prostate cancer

Further analysis to identify age-specific PSA cut-offs for maximum sensitivity and specificity for identifying high risk patients for further testing

EuroSIDA study group

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