

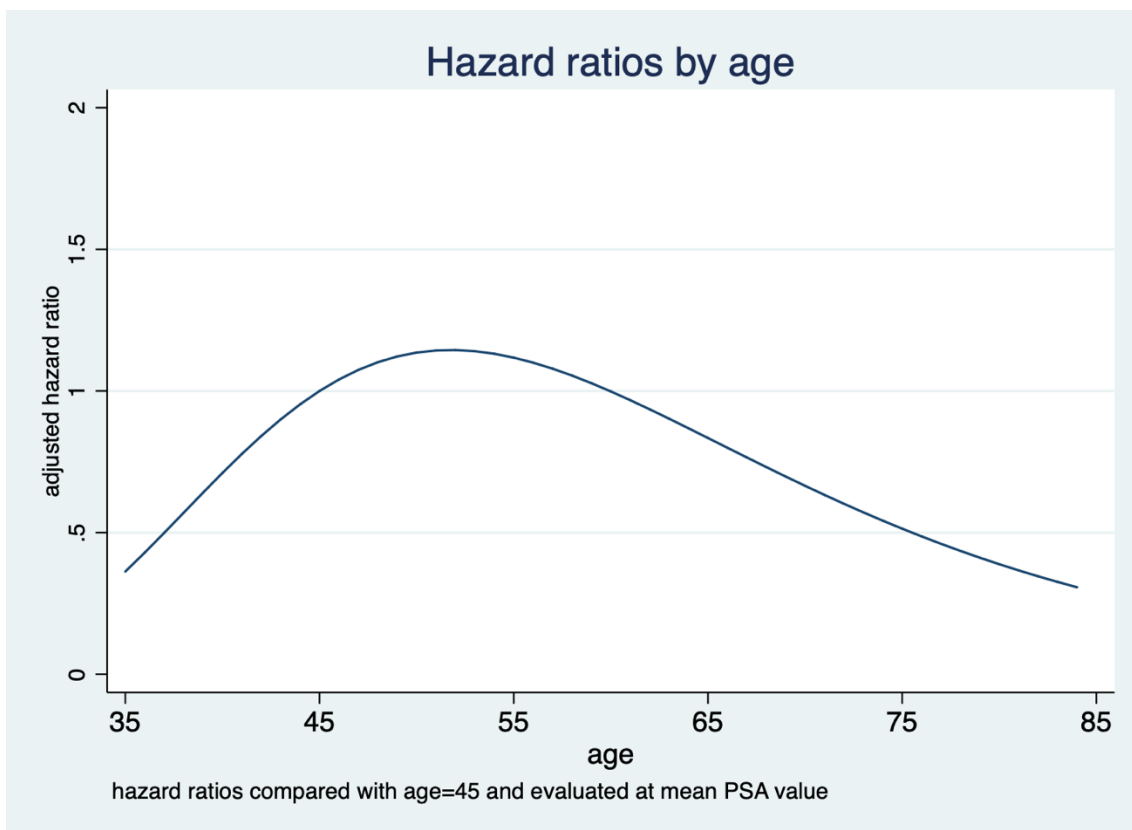
Supplementary Table S1: Crude Rates of Prostate Cancer per 10,000 person years on QResearch. n/a indicates fewer than 5 cases where counts have been suppressed

Age Band at cohort entry	QResearch Derivation Cohort		QResearch Validation Cohort	
	Cases	Incidence Rate	Cases	Incidence Rate
total	40,821	84.86 (84.04 to 85.68)	14,033	85.07 (83.67 to 86.49)
25-29 years	14	3.66 (2.17 to 6.18)	n/a	0.76 (0.11 to 5.42)
30-34 years	78	7.29 (5.84 to 9.10)	23	6.50 (4.32 to 9.79)
35-39 years	393	17.28 (15.65 to 19.07)	107	14.16 (11.71 to 17.11)
40-44 years	1158	31.10 (29.36 to 32.95)	366	29.32 (26.46 to 32.48)
45-49 years	2506	48.33 (46.47 to 50.26)	859	48.44 (45.30 to 51.79)
50-54 years	5111	73.43 (71.45 to 75.47)	1643	68.26 (65.04 to 71.64)
55-59 years	6453	91.76 (89.55 to 94.03)	2269	93.71 (89.93 to 97.64)
60-64 years	7596	110.29 (107.84 to 112.80)	2647	112.07 (107.88 to 116.42)
65-69 years	7239	118.68 (115.98 to 121.44)	2453	117.33 (112.78 to 122.07)
70-74 years	5335	122.15 (118.92 to 125.47)	1910	125.72 (120.20 to 131.48)
75-79 years	3445	125.39 (121.27 to 129.64)	1211	128.66 (121.61 to 136.11)
80-84 years	1493	108.56 (103.19 to 114.21)	544	110.57 (101.66 to 120.27)

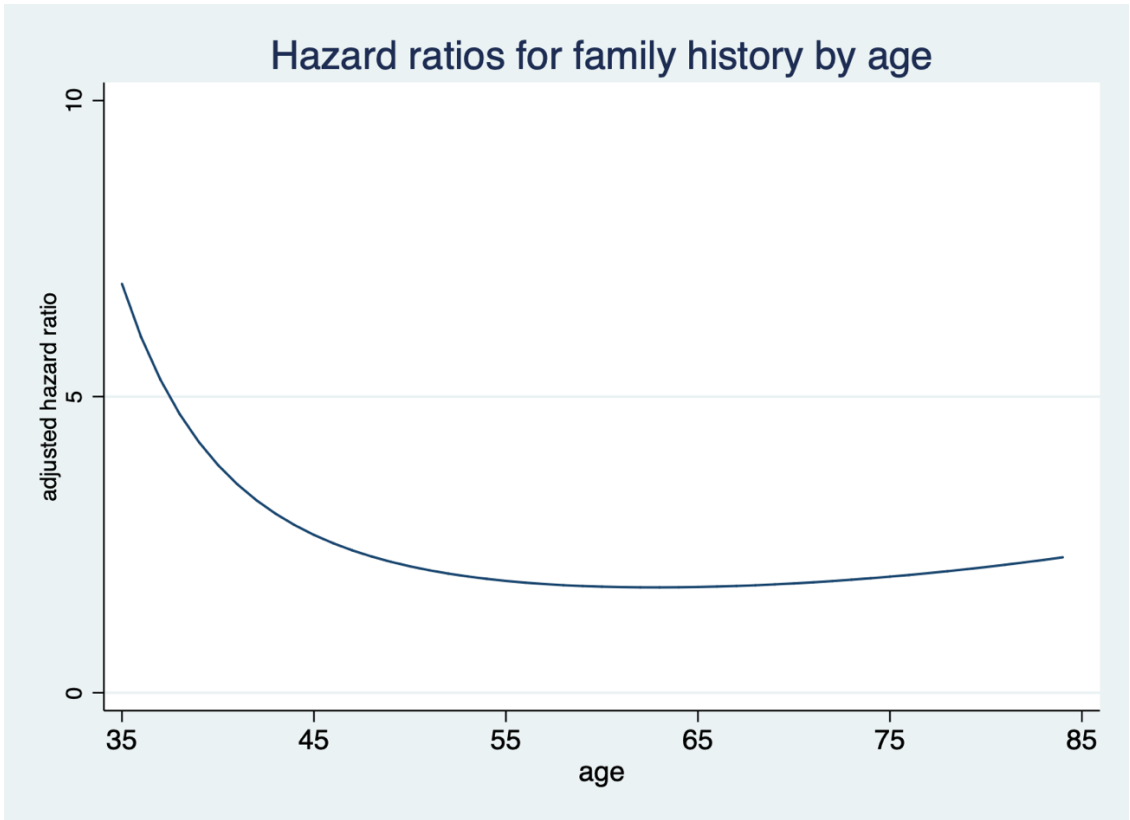
Supplementary Figure S1

Supplementary figures 1a-e show graphs of the adjusted hazard ratios for the fractional polynomial terms for age, body mass index, and PSA as well as interaction terms. Increasing deprivation was associated with a decreased risk of prostate cancer. A positive family history of prostate cancer was associated with a decreased risk of prostate cancer. A positive family history of prostate cancer was associated with an 83% (95% CI 66 to 102%) increased risk of prostate cancer at the mean age. Black Caribbean ethnicity was associated with a 56% (95% CI 46% to 67%) increased risk of prostate cancer and Black African ethnicity with a 14% (95% CI 4% to 26%) increased risk compared with the white/not recorded ethnic group. Chinese, Indian, Pakistani, Bangladeshi and the other Asian ethnic groups all had significantly lower risks of prostate cancer than the white/not recorded group.

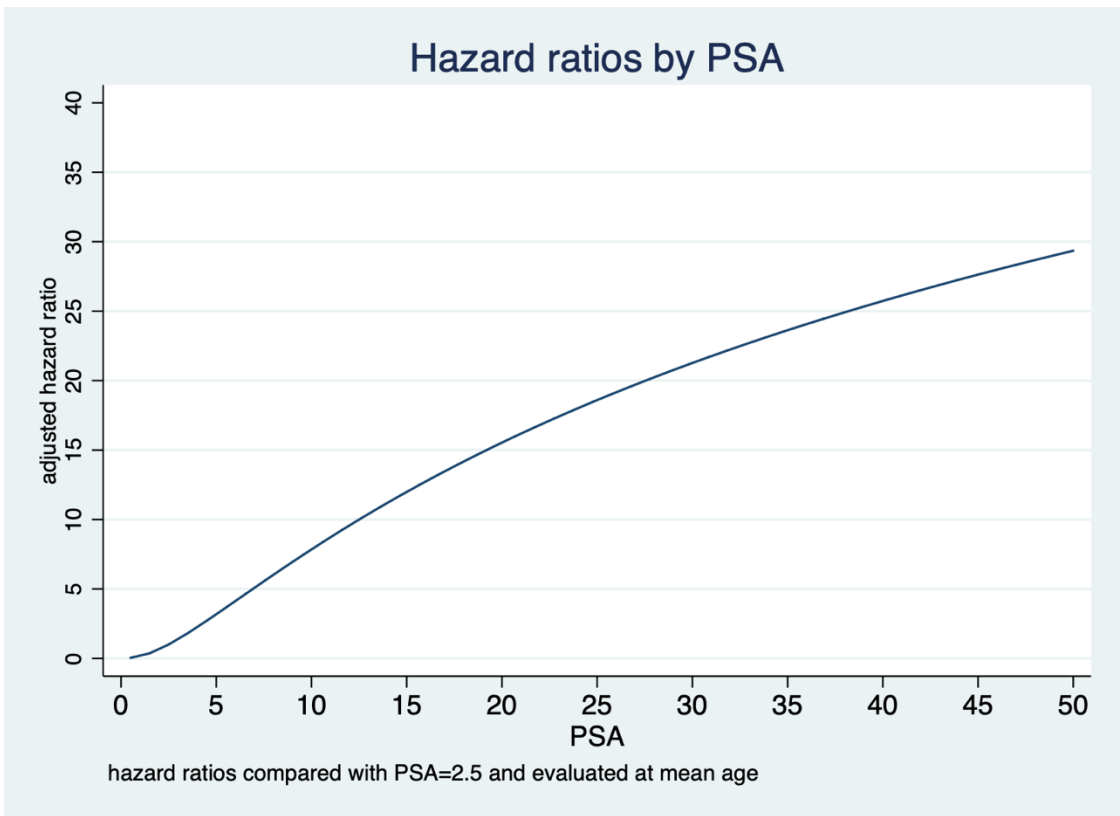
Supplementary Figure S1a Hazard ratios for the final model by age



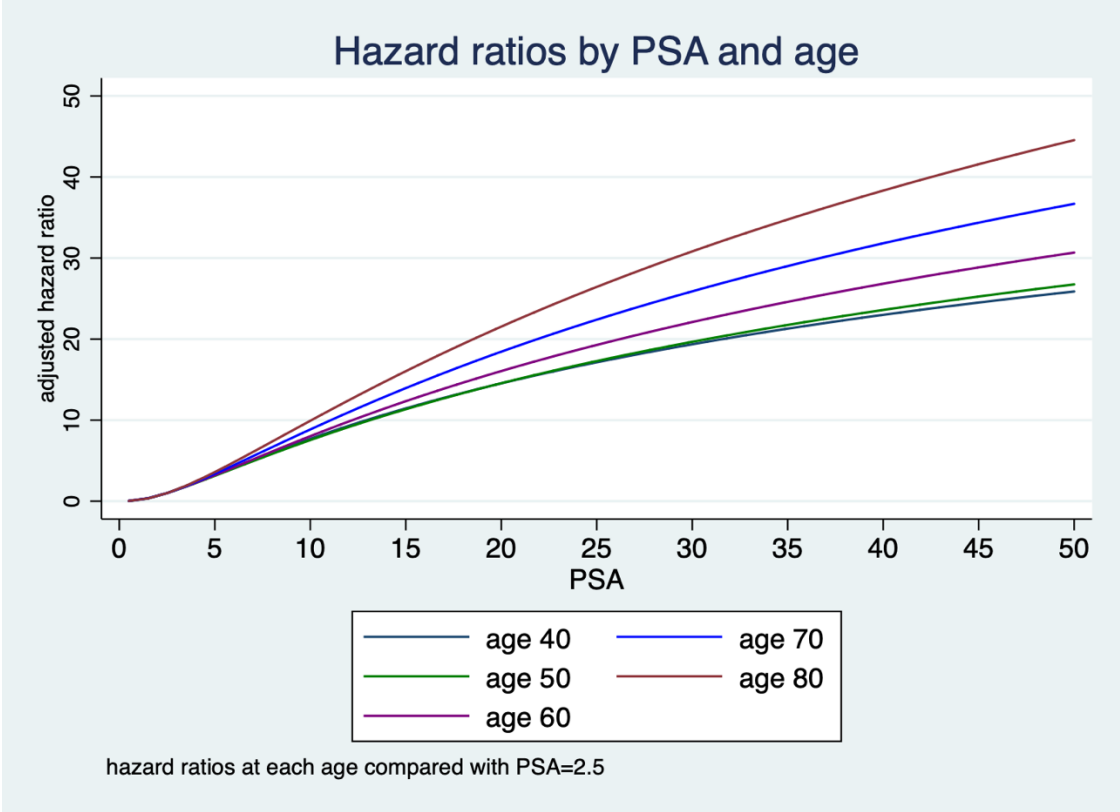
Supplementary Figure S1b Hazard ratios for the final model by family history by age



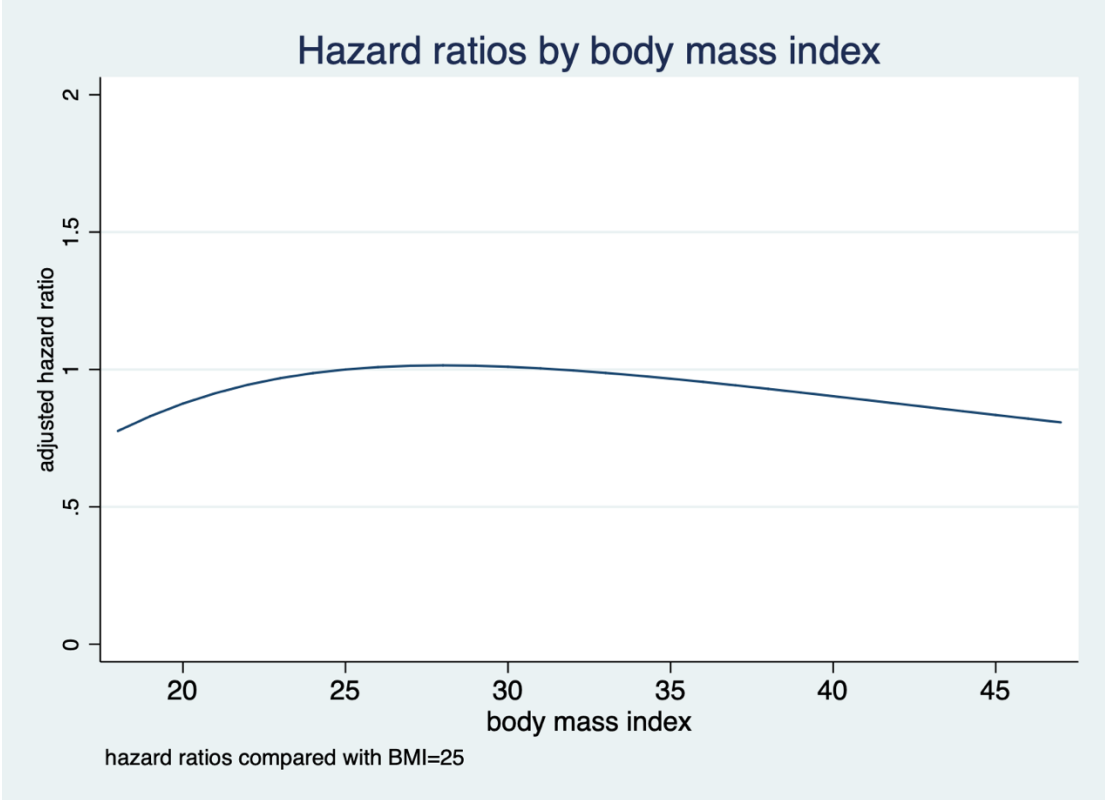
Supplementary Figure S1c Hazard ratios for the final model by PSA



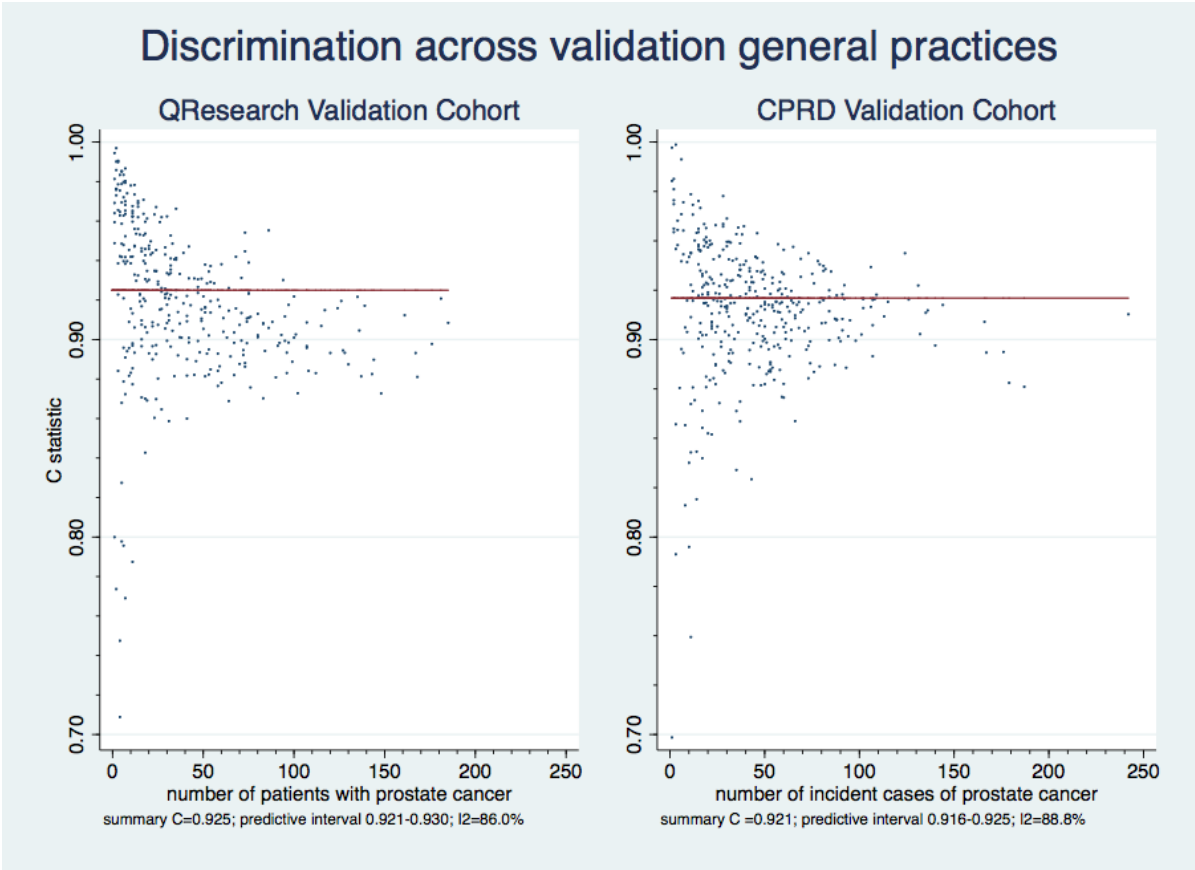
Supplementary Figure S1d Hazard ratios for the final model by age



Supplementary Figure S1e Hazard ratios for the final model by body mass index

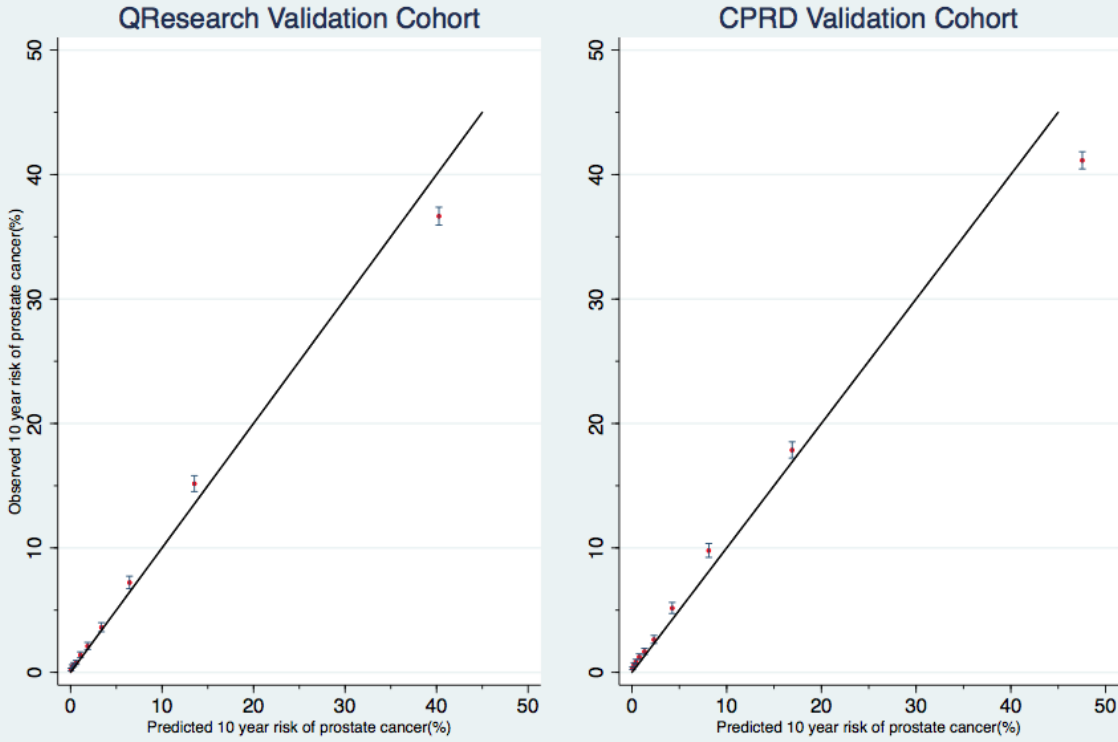


Supplementary Figure S2



Supplementary Figure S3

Predicted and observed 10 year risk (%) of prostate cancer



Supplementary Table S2. Sensitivity, specificity and observed 10-year risk based on tenths of predicted 10-year risk of prostate cancer in the QResearch validation cohort. There were 12,886 cases of prostate cancer during 10 years follow-up from a cohort of 292,084 men.

	Risk threshold (%)	True Negative	False Negative	False Positive	True Positive	Sensitivity (%)	Specificity (%)	Observed 10-year risk (95% CI)
top 10% of risk	20.1	258,426	4,450	20,772	8,436	65.5	92.6	36.7 (35.9 to 37.4)
top 20% of risk	9.0	231,586	2,082	47,612	10,804	83.8	82.9	25.9 (25.4 to 26.4)
top 30% of risk	4.5	203,297	1,162	75,901	11,724	91.0	72.8	19.7 (19.3 to 20.0)
top 40% of risk	2.5	174,531	720	104,667	12,166	94.4	62.5	15.6 (15.3 to 15.9)
top 50% of risk	1.4	145,579	463	133,619	12,423	96.4	52.1	12.9 (12.7 to 13.2)

Supplementary Figure S4: Web calculator showing 10-year risk of developing prostate cancer in two clinical examples

This calculator is only valid if you do not already have a diagnosis of prostate cancer, and are free of the following symptoms: urinary retention, urinary frequency, nocturia, erectile dysfunction, haematuria and haematospermia.

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About you

Age (25-84):

Sex: Male

Ethnicity:

UK postcode: leave blank if unknown
Postcode:

Clinical information

Smoking status:

Prostate specific antigen level (PSA) (ng/ml):

Do you have a family history of ...
prostate cancer?

Do you currently have ...
Diabetes:

Mental depression or schizophrenia?

Leave blank if unknown

Body mass index
Height (cm):

Weight (kg):

Calculate risk over years. [Data/Save risk](#)

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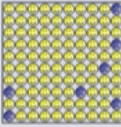
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Your results

Your risk of having a diagnosis of prostate cancer within the next 10 years is 6.7%.

In other words, in a crowd of 100 people with the same risk factors as you, 7 are likely to have a diagnosis of prostate cancer within the next 10 years.



Risk of diagnosis of prostate cancer

Your score has been calculated using estimated data, as some information was left blank.

Your body mass index was calculated as 25.71 kg/m².

About you

Age (25-84):

Sex: Male

Ethnicity:

UK postcode: leave blank if unknown
Postcode:

Clinical information

Smoking status:

Prostate specific antigen level (PSA) (ng/ml):

Do you have a family history of ...
prostate cancer?

Do you currently have ...
Diabetes:

Mental depression or schizophrenia?

Leave blank if unknown

Body mass index
Height (cm):

Weight (kg):

Calculate risk over years. [Calculate risk](#)

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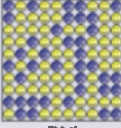
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Your results

Your risk of having a diagnosis of prostate cancer within the next 10 years is 39.2%.

In other words, in a crowd of 100 people with the same risk factors as you, 39 are likely to have a diagnosis of prostate cancer within the next 10 years.



Risk of diagnosis of prostate cancer

Your score has been calculated using estimated data, as some information was left blank.

Your body mass index was calculated as 25.71 kg/m².