Supplementary

Table 1. The variables used as input for the prediction models for both years. The models in which they were used are depicted as well as the question of the EPIC questionnaire they apply to (if applicable). Additionally, the possible input values are described with a number and the meaning of that number as input. The numbers in the last column are numbers from the data.

Variable Name	Short description	Relates to EPIC-26 question	Input values
treatments	The four big treatments groups		 1 = prostatectomy 2 = EBRT 3 = brachytherapy 4 = no active therapy

epic26_1_urineverlies	urine loss during last 4 weeks	EPIC-26 question 1	1 = > once a day 2 = once a day 3 = > once a week 4 = once a week 5 = rarely/never
epic26_2_urineophouden	urinary control	EPIC-26 question 2	 1 = no control 2 = frequent dribbling 3 = occasional dribbling 4 = total control
epic26_3_verbanden	pads or adult diapers	EPIC-26 question 3	1 = None 2 = 1 pad per day 3 = 2 pads per day 4 = 3 or more pads per day

epic26_4_nadruppelen	dripping/leaking urine	EPIC-26 question 4a	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_5_pijnplassen	pain/burning on urination	EPIC-26 question 4b	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_6_bloedurine	bleeding with urination	EPIC-26 question 4c	1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem

			5 = big problem
epic26_7_zwakkestraal	weak stream/incomplete emptying	EPIC-26 question 4d	1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_8_aandrang	need to urinate frequently	EPIC-26 question 4e	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem

epic26_9_urineprobleem	urinary function	EPIC-26 question 5	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_10_drangontlasting	urgency of have bowel movement	EPIC-26 question 6a	1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_11_vakerontlasting	increased frequency of bowel movements	EPIC-26 question 6b	1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem

			5 = big problem
epic26_12_controledef	control loss of stool	EPIC-26 question 6c	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_13_bloedontlasting	bloody stool	EPIC-26 question 6d	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem

epic26_14_krampdarm	abdominal/pelvic/rectal pain	EPIC-26 question 6e	1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_15_ontlastingprobleem	bowel habits	EPIC-26 question 7	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem

epic26_16_goederectie	ability to have erection	EPIC-26 question 8a	1 = very poor to none 2 = poor 3 = fair 4 = good 5 = very good	
epic26_17_goedklaarkomen	ability to reach orgasm/climax	EPIC-26 question 8b	1 = very poor to none 2 = poor 3 = fair 4 = good 5 = very good	

epic26_18_kwalerectie	quality of erections	EPIC-26 question 9	 1 = none at all 2 = not firm enough for sexual activity 3 = firm enough for masturbation/foreplay 4 = firm enough for intercourse
epic26_19_kwanterectie1	frequency of erections	EPIC-26 question 10	1 = never when I wanted one 2 = <50% when I wanted one 3 = 50% when I wanted one 4 = >50% when I wanted one 5 = whenever I wanted one

epic26_20_oordeelseksfunc	ability to function sexually	EPIC-26 question 11	1 = very poor 2 = poor 3 = fair 4 = good 5 = very good
epic26_21_problseksfunc	sexual functioning, how big a problem	EPIC-26 question 12	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem

epic26_22_opvliegers	hot flashes	EPIC-26 question 13a	1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_23_gevoeligeborsten	breast tenderness/enlargement	EPIC-26 question 13b	1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem

epic26_24_depressie	feeling depressed	EPIC-26 question 13c	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
epic26_25_weinigenergie	lack of energy	EPIC-26 question 13d	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem

epic26_26_gewicht	body weight change	EPIC-26 question 13e	 1 = no problem 2 = very small problem 3 = small problem 4 = moderate problem 5 = big problem
sCT	Tumor T stage		1 = T1 2 = T2 3 = T3
sCN	Tumor N stage		0 = missing data 1 = NO 2 = X ^a
nLeeft	Age at diagnosis		age in years

ch_indexgr	charlson comorbidity index simplified	0 = missing data 1 = no comorbidities 2 = 1 point 3 = >=2 points
psa_diag	PSA (prostate-specific antigen) level at diagnosis	ng/M
gleason_group	Gleason group	1 = group 1 (gleason score 6) 2 = group 2 (gleason score 3+4=7) 3 = group 3 (gleason score 4+3=7) 4 = group 4 (gleason score 4+4=7) 5 = group 5 (gleason score 9- 10)

diabetes	The presence of diabetes	1 = no diabetes 2 = diabetes
cardiovascular Disease	The presence of cardiovascular disease (CVD)	1 = no CVD 2 = CVD
hormoneTherapy	Hormone therapy given to patients	 1 = no hormone therapy given 2 = hormone therapy given
alg_rook	Alcohol use	1 = no 2 = previously 3 = yes

alg_alc	Smoking status	1 = non smoker
		2 = former smoker
		3 = current smoker

^a N0 indicates that there are no cancerous lymph nodes in nearby areas

Table 2. Multicollinearity assessment of statistically significant predictors

Predictor	VIF
Diabetes	1.035908
Cardiovascular disease	1.053124
Urine loss during last 4 weeks	1.673921
Increased frequency of bowel movements1	1.082678
Bloody stool	1.070508
Dripping/leaking urine	1.548691
Urinary control	1.773658
Treatments	1.198442
Hormone therapy	1.026778

Abbreviation: VIF, variance inflation factor

Table 3. Distribution of UI in patients at diagnosis, 1-year and 2-year post diagnosis. For 1-year and 2-year the percentages are provided for each treatment separately. Explain abbreviations in footnote

	Diagnosis (n=847)	1-year (n=847)				2	-year (n=670))			
			AS (n=350)	RP (n=279)	BT (n=166)	EBRT (n=52)		AS (n=270)	RP (n=225)	BT (n=133)	EBRT (n=42)
More than once a day	25 (3%)	111 (13%)	17 (5%)	87 (31%)	4 (2%)	3 (6%)	79 (12%)	18 (7%)	57 (25%)	4 (3%)	0 (0%)
Once a day	45 (5%)	73 (9%)	17 (5%)	42 (15%)	8 (5%)	6 (12%)	66 (10%)	19 (7%)	34 (15%)	7 (5%)	6 (14%)
More than once a week	29 (3%)	34 (4%)	9 (3%)	18 (6%)	6(4%)	1 (2%)	33 (5%)	10 (4%)	18 (8%)	4 (3%)	1 (2%)
Once a week	43 (5%)	75 (9%)	32 (9%)	27 (10%)	13 (8%)	3 (6%)	68 (10%)	23 (9%)	22 (10%)	16 (12%)	7 (17%)
Rarely or never	705 (83%)	554 (65%)	275 (79%)	105 (38%)	135 (81%)	39 (75%)	424 (63%)	200 (74%)	94 (42%)	102 (77%)	28 (67%)

Abbreviations: RP, radical prostatectomy; BT, brachytherapy; EBRT, external beam radiotherapy; AS, active surveillance

Figure 1: Calibration plots for 1-year and 2-year UI based on the different models (LR, RF, SVM) to visually represent the degree of similarity between the predicted probabilities and the observed frequencies. When a model is perfect, it conforms to the diagonal line. The plot indicates that all models had comparable performance in terms of predicting probabilities, with little variation between observed and predicted values.





Figure 2. A nomogram for the 1-year model. A point score was assigned to each predictor, indicating its degree of influence on the likelihood of experiencing UI. By adding up the scores, the total point value can be obtained and used to calculate the probability of the outcome. Table 4. Positive and negative predictive values of generated models

Models	PPV	NPV
LR-1year	0.81	0.64
RF-1year	0.80	0.57
SVM 1year	0.85	0.57
LR 2-year	0.67	0.46
RF 2-year	0.71	0.53
SVM 2-year	0.70	0.42

Table 5. N	Model inpu	t variables and	their logistic	regression	coefficients a	nd P values.

Variable	1-year Coefficient	1-year P value	2-year coefficient	2-year P value
Hormone therapy	-1.136	0.001	-1.136	0.003
Treatment	-0.822	<0.001	-0.618	<0.001
Bloody stool	0.622	<0.001	0.718	0.034
Leaking urine	0.617	<0.001	-	-
Increased frequency of bowel movement	-0.513	0.001	-0.728	0.001
Urinary control	-0.496	0.014	-0.797	<0.001
Cardiovascular disease	0.368	0.038	_	_
Urine loss	-0.282	0.029	_	_
Diabetes	0.042	0.875	0.264	0.396
Weight change	_	_	-0.716	0.005
Bowel habits	_	_	0.615	0.004
Adult diaper	-	_	0.530	0.217