Supplementary Online Content

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable1: Diagnosis and procedure codes

	ICD 9 dxs code	ICD 9 procedure code	HCPCS/CPT code
Diagnosis			
Prostate cancer dx	185		
Alzheimer	3310		
Dementia	290, 29420 29411, 29410, 29282, 2912, 29421		
Treatment			
Hormone (androgen deprivation therapy or ADT)	V07.59		C9216, C9430, G0356, G9132, J0128, J1050, J1051, J1950, J3315, J9165, J9202, J9217-J9219, S0165, S0175, S9560
Orchiectomy		62.3, 62.4, 62.41, 62.42	54520, 54521, 54522, 54530, 54535,
Surgery Radical prostatectomy Laparoscopic (radical prostatectomy, Robotic-assisted laparoscopic radical prostatectomy)		17.42, 40.1, 40.2, 40.3, 40.5, 40.53, 40.59, 60.21, 60.29, 60.2–60.6, 60.51-60.59, 60.61, 60.62, 60.69	54690, 55810, 55812, 55815, 55821, 55831, 55840, 55842, 55845, 55866, 55899, S2900
Cryosurgery (*cryotherapy/ cryoablation*)			55873
Radiation : EBRT	V58.0, V66.1, V67.1	60.99, 92.2, 92.20, 92.21-92.29, 92.3, 92.30-92.39, 92.4, 92.41	0073T, 0082T, 0182T, 0197T, 55860, 55862, 55865, 55875, 55876, 61793, 76872, 76873, 76965, 77261–79999, C1715, C1717, C2638-C2641, C2698, C2699, G0173, G0251, G0256, G0261, G0339, G0340, G0458, G6003, G6005, G6006, G6015, Q3001, S8049; Revenue center codes 0330 or 0333, 0339 or 0342
Radiation: brachytherapy			0182T, 77750-77799, C1715, C1716, C1717, C1719,C2616, C2634-C2645, C2698, C2699, G0458, Q3001
Chemo tx	V58.1 V66.2, V67.2	99.25	95990, 95991, 96400-96549, 96530, J0640, J2405, J8520 - J9999 K0415, K0416, Q0083-Q0085, Q0179, S0177, S0181 Revenue center codes 0331, 0332, or 0335; For 2005 only, use these G0355-G0363, G9021-G9032

eTable2: Association between ADT and diagnosis of Alzheimer's or dementia (comorbidity score subgroups). Hazard ratio represent the comparison between patients with ADT (within 24 months of diagnosis) and those without ADT - sub groups of comorbidity score

Model	Comorbidity score					
	Zero		1-2		>2	
	Alzheimer's HR (CI)	Dementia HR (CI)	Alzheimer's HR (CI)	Dementia HR (CI)	Alzheimer's HR (CI)	Dementia HR (C
Unadjusted						
	1.61 (1.55, 1.67)	1.65 (1.60, 1.69)	1.09 (1.02, 1.16)	1.14 (1.09, 1.19)	0.92 (0.77, 1.09)	0.91 (0.80, 1.03)
Propensity score adjusted * (IPTW)**						
	1.22 1.17, 1.27)	1.28 (1.24,1.32)	0.93 (0.87, 1.00)	1.02 (0.96, 1.08)	0.88 (071, 1.09)	0.98 (0.83, 1.15)

* Adjusted for age at diagnosis, race and ethnicity, geographic area, marital status, caner stage, treatment type and socio-economic status
** Inverse probability of treatment weighting

eTable3: Association between ADT and diagnosis of Alzheimer's or dementia (treatment type subgroups). Hazard ratio represent the comparison between patients with ADT (within 24 months of diagnosis) and those without ADT - sub groups of treatment type

Model	Treatment type					
	Surgery$		Radiation$$		Chemotherapy$$$	
	Alzheimer's HR(CI)	Dementia HR (CI)	Alzheimer's HR(CI)	Dementia HR (CI)	Alzheimer's HR(CI)	Dementia HR (CI)
Unadjusted						
	1.31 (1.22, 1.41)	1.36 (1.28, 1.43)	1.54 (1.48, 1.60)	1.57 (1.52, 1.62)	2.02 (1.34, 3.05)	1.83 (1.36, 2.46)
Propensity score adjusted * (IPTW)						
	0.92 (0.85, 0.98)	1.16 (1.10, 1.23)	1.22 (1.17, 1.27)	1.21 (1.67, 1.24)	1.44 (0.96, 2.16)	1.24 (0.93, 1.65)

$ sub group of surgery (surgery alone or with radiation/chemo/ADT)
$$ sub group of radiation (radiation alone or with chemo/ADT)
$$$ sub group of chemotherapy (chemotherapy alone or with ADT)
* Adjusted for age at diagnosis, race and ethnicity, geographic area, marital status, comorbidity score, caner stage, and socio-economic status;
** Inverse probability of treatment weighting

eTable4: Association between ADT and diagnosis of Alzheimer's or dementia (cancer stage). Hazard ratio represent the comparison between patients with ADT (within 24 months of diagnosis) and those without ADT – localized vs. advanced stage

Model	Cancer stage			
	Localized		Advanced	
	Alzheimer's HR (CI)	Dementia HR (CI)	Alzheimer's HR (CI)	Dementia HR (CI)
Unadjusted				
	1.58 (1.52, 1.63)	1.62 (1.58, 1.67)	1.45 (1.35, 1.54)	1.51 (1.44, 1.59)
Propensity score adjusted * (IPTW)**				
	1.15 (1.10, 1.20)	1.22 (1.19, 1.26)	1.08 (1.01, 1.16)	1.15 (1.09, 1.22)

* Adjusted for age at diagnosis, race and ethnicity, geographic area, marital status, comorbidity score, treatment type and socio-economic status;
** Inverse probability of treatment weighting