

Supplementary Table 1: Healthcare Common Procedure Coding System (HCPCS)

codes to identify TAVR and SAVR in the Carrier file

Procedure	HCPCS codes
SAVR	33405, 33406, 33410, 33411, 33412, 33413
TAVR	33361, 33362, 33363, 33364, 33365, 33366, 33367, 33368, 33369, 0256T, 0257T, 0258T, 0259T, 0318T

Supplementary Table 2. Dementia and cognitive impairment (ICD-9 Codes)

Diagnosis Code	
290.0	Senile dementia, uncomplicated
290.1	Presenile dementia
290.10	Presenile uncomplicated
290.11	Presenile dementia with delirium
290.12	Presenile dementia with delusions
290.13	Presenile dementia with depression
290.2	Senile dementia with delusions or depression
290.20	Senile dementia with delusions
290.21	Senile dementia with depression
290.3	Senile dementia with delirium
290.4	Vascular dementia
290.40	Vascular dementia uncomplicated
290.41	Vascular dementia with delirium
290.42	Vascular dementia with delusions
290.43	Vascular dementia with depression
294.1	Dementia classified elsewhere (any specific etiology)
294.10	Dementia classified elsewhere without behavioral disturbance
294.11	Dementia classified elsewhere with behavioral disturbance
294.2	Dementia unspecified
294.21	Dementia unspecified
331.0	Alzheimer's disease
331.11	Pick's Disease
331.19	Frontal dementia
331.82	Dementia with Lewy body
331.83	Mild cognitive impairment
290.8	Other non-specified senile psychoses
294.0	Amnesic disorder classified elsewhere (Korsakoff's)
331.2	Senile degeneration of brain
331.7	Cerebral degeneration classified elsewhere
797	Senility without mention of psychosis

Supplementary Table 3. Dementia and cognitive impairment (ICD-10 Codes)

Diagnosis code	Description
F0150	Vascular dementia
F0151	Vascular dementia
F0280	Dementia in other diseases classified elsewhere
F0281	Dementia in other diseases classified elsewhere
F0390	Unspecified dementia
F0391	Unspecified dementia
F10.27	Alcohol dependence with alcohol induced persisting dementia
G300	Alzheimer's disease
G301	Alzheimer's disease
G308	Alzheimer's disease
G309	Alzheimer's disease
G3101	Pick's disease
G3109	Other frontotemporal dementia
G3183	Dementia with Lewy Body
G3184	Mild cognitive impairment
F04	Amnesic disorder due to known physiological condition
F10.26	Alcohol dependence with alcohol induced persisting amnesic disorder
G311	Senile degeneration of brain, not elsewhere classified
G312	Degeneration of nervous system due to alcohol
R4181	Age-related cognitive decline

Supplementary Table 4. Characteristics of patients undergoing AVR in those with and without ADRD

Characteristic	2010			2011			2012			2013		
	ADRD (n=270)	No ADRD (n=5285)	p-value	ADRD (n=406)	No ADRD (n=5538)	p-value	ADRD (n=637)	No ADRD (n=5669)	p-value	ADRD (n=763)	No ADRD (n=6304)	p-value
Mean Age (SD)	79.4 (5.8)	77.4 (6.1)	<0.001	79.9 (6.2)	77.7 (6.5)	<0.001	81.5 (6.5)	78.1 (6.6)	<0.001	81.4 (6.3)	78.3 (6.8)	<0.001
Race, n (%) non-white	22 (8.1)	304 (5.8)	0.11	34 (8.4)	283 (5.1)	0.008	47 (7.4)	326 (5.8)	0.11	56 (7.3)	317 (5.0)	0.010
Gender, n (%) female	113 (41.9)	2174 (41.1)	0.85	177 (43.6)	2249 (40.6)	0.25	294 (46.2)	2404 (42.4)	0.076	354 (46.4)	2632 (41.8)	0.015
Mean HCC score (SD)	2.80 (1.62)	2.03 (1.20)	<0.001	2.75 (1.47)	2.07 (1.21)	<0.001	2.68 (1.35)	2.14 (1.25)	<0.001	2.85 (1.46)	2.16 (1.25)	<0.001
Socioeconomic class, n (%) in lowest tercile	86 (31.9)	1745 (33.1)	0.74	144 (35.6)	1814 (32.8)	0.27	229 (35.9)	1847 (32.7)	0.10	369 (35.3)	2060 (32.7)	0.17
n (%) TAVR	-	-	-	40 (9.9)	264 (4.8)	<0.001	186 (29.2)	695 (12.3)	<0.001	316 (41.4)	1253 (19.9)	<0.001
n (%) Non-elective	108 (40.0)	1541 (29.2)	<0.001	137 (33.7)	1522 (27.5)	0.008	210 (33.0)	1554 (27.4)	0.004	218 (28.6)	1606 (25.5)	0.066
Mean No. hospital days in 12 months prior to procedure (SD)	7.4 (11.1)	3.4 (7.5)	<0.001	6.6 (10.8)	3.4 (7.3)	<0.001	7.1 (11.2)	3.5 (7.3)	<0.001	7.2 (10.4)	3.5 (7.0)	<0.001
n (%) with Nursing home stay within 90 days of procedure	*	*	*	24 (5.9)	103 (1.9)	<0.001	80 (12.6)	171 (3.0)	<0.001	92 (12.1)	206 (3.3)	<0.001

*Masked due to small cell size

Characteristic	2014			2015			2016		
	ADRD (n=888)	No ADRD (n=6575)	p- value	ADRD (n=1124)	No ADRD (n=7174)	p-value	ADRD (n=1117)	No ADRD (n=7572)	p-value
Mean Age (SD)	82.5 (6.6)	78.5 (6.9)	<0.001	82.3 (6.8)	78.5 (7.0)	<0.001	82.3 (6.7)	78.6 (7.2)	<0.001
Race, n (%) non-white	75 (8.4)	370 (5.6)	0.002	90 (8.0)	400 (5.6)	0.002	67 (6.0)	431 (5.7)	0.73
Gender, n (%) female	415 (46.7)	2719 (41.4)	0.003	552 (49.1)	2937 (40.9)	<0.001	487 (43.6)	3202 (42.3)	0.42
Mean HCC score (SD)	2.88 (1.41)	2.20 (1.24)	<0.001	2.88 (1.44)	2.24 (1.30)	<0.001	2.73 (1.39)	2.21 (1.30)	<0.001
Socioeconomic class, n (%) in lowest tercile	308 (34.7)	2148 (32.7)	0.25	361 (32.2)	2371 (33.1)	0.54	382 (34.3)	2479 (32.8)	0.32
n (%) TAVR	504 (56.8)	1883 (28.6)	<0.001	731 (65.0)	2611 (36.4)	<0.001	792 (70.9)	3620 (47.8)	<0.001
n (%) Non-elective	242 (27.3)	1528 (23.2)	0.009	281 (25.0)	1575 (22.0)	0.026	240 (21.5)	1528 (20.2)	0.32
Mean No. hospital days in 12 months prior to procedure (SD)	7.3 (10.6)	3.6 (7.7)	<0.001	7.1 (12.1)	3.7 (7.8)	<0.001	6.2 (9.9)	3.7 (7.4)	<0.001
n (%) with Nursing home stay within 90 days of procedure	105 (11.8)	230 (3.5)	<0.001	132 (11.7)	295 (4.1)	<0.001	139 (12.4)	328 (4.3)	<0.001

Supplementary Figure S1. Unadjusted mortality in patients with and without Alzheimer's Disease and related dementias (ADRD) undergoing transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement (SAVR).

