Supplementary Tables 1-3

Supplementary Table 1. ICD-10 diagnostic codes used for outcomes, exclusions, and propensity score matching of cohorts

Category	ICD-10 code(s)	Main sub-categories
Outcomes of interest		
Dementia	F01-F03, G30, G31.0, G31.2, G31.83	F01 (vascular dementia), G30 (Alzheimer's disease)
Movement disorders	G20-G26	G20 (Parkinson's disease)
Mild cognitive impairment	G31.84	
Cerebrovascular disease	I60-I69	I63 (stroke), I60-I62 (cerebral haemorrhage)
Additional diagnoses excluded at baseline		
REM sleep behaviour disorder	G7.52, F51.8	
Transient ischaemic attacks	G45	
Delirium	F05	
Propensity score matched diagnoses		
Ischaemic heart disease	I20-I25	
Other forms of heart disease	I30-I52	I48 (Atrial fibrillation and flutter), I50 (heart failure)
Diabetes mellitus	E08-E13	
Mood disorder	F30-F39	
Psychotic disorders	F20-F29	
Nicotine dependence	F17	
Alcohol use disorder	F10	
Epilepsy	G40	
Migraine	G43	
Intracranial injury with loss of consciousness	S06	
Negative control outcomes		
Benign colonic polyp	D12.0	
Cutaneous abscess	L02	
Ganglion	M67.4	
Hallux valgus (acquired)	M20.1	
Hernia	K40-K46	
Ingrowing nail	L60.0	
Onycholysis	L60.1	
Otalgia	H92.09	
Sebaceous cyst	L72.3	
Senile keratosis	L82.1	
Trigger finger	M65.3	
Viral warts	B07	

Supplementary Table 2. Unmatched cohorts: baseline characteristics

	CCBs vs diuretics			CCBs vs RAS agents			CCBs vs beta-blockers		
Baseline characteristics									
	CCBs	*Diuretics*	*SD*	*CCBs*	*RAS agents*	*SD*	*CCBs*	*Beta-blockers*	*SD*
Cohort size	233,860	604,411		183,721	768,950		276,939	573,303	
Age at index (y)	63.4 (10.9)	61.7 (11.0)	0.15	64.0 (11.5)	61.2 (10.5)	0.26	62.6 (10.8)	63.0 (11.1)	0.04
Sex (M:F)	50%: 50%	39%:61%	0.22	41%: 59%	50%: 50%	0.17	45%:55%	50%:50%	0.09
Race (W, B/AA, O/NK)[a]	64%, 20%, 16%	74%, 15%, 11%	0.21	63%, 24%, 13%	76%, 11%, 13%	0.28	62%, 25%, 13%	78%, 9%, 13%	0.42
Systolic BP[b]	137 (21)	132 (20)	0.24	135 (22)	134 (20)	0.09	139 (20)	128 (21)	0.52
Diastolic BP[b]	79 (13)	77 (13)	0.13	78 (14)	78 (13)	0.05	80 (13)	74 (13)	0.46
BMI[b]	29 (6)	32 (8)	0.43	29 (7)	31 (7)	0.29	30.4 (7.0)	30.3 (7.1)	0.02
Diabetes mellitus	15%	17%	0.06	10%	21%	0.31	16%	17%	0.01
Previous exposure to AHTs[c]	29% ACEI, 15% ARB, 30% BB	34% ACEI, 19% ARB, 32% BB	0.11, 0.12, 0.06	33% BB, 29% D	30% BB, 40% D	0.08 0.23	36% D, 32% ACEI, 20% ARB	33% D, 27% ACEI, 12% ARB	0.06, 0.10, 0.21
Data density (average facts per patient)[d]	8,188	10,375		9,478	8,955		9,942	9,345	

SD: standard difference.

[a]W: white. B/AA: black or African American. O/NK: other or not known.

[b]Most recent value before exposure period. BP: blood pressure.

[c]ACEI: angiotensin converting enzyme inhibitors. ARB: angiotensin II inhibitors. BB: beta-blockers. D: diuretics.

[d]Comprising diagnoses, procedures, medications, lab results, and vital signs.

Supplementary Table 3: Matched cohort characteristics and outcomes over a 2 year period associated with CCBs compared to diuretics, RAS agents, and beta-blockers

	CCBs vs diuretics		CCBs vs RAS agents		CCBs vs beta-blockers	
Baseline characteristics						
	CCBs	*Diuretics*	*CCBs*	*RAS agents*	*CCBs*	*Beta-blockers*
Cohort size	231,764	231,764	181,495	181,495	234,015	234,015
Age at index (y)	63.3 (10.9)	63.5 (11.1)	63.9 (11.4)	64.0 (11.4)	62.9 (10.8)	63.1 (11.0)
Sex (M:F)	50%:50%	49%:51%	41%:59%	41%:59%	44%:56%	45%:55%
Race (W, B/AA, O/NK)[a]	65%, 20%, 15%	66%, 18%, 16%	64%, 23%, 13%	64%, 23%, 13%	69%, 17%, 14%	70%, 17%, 13%
Systolic BP[b]	137 (21)	135 (21)	135 (21.7)	134 (20.7)	137 (20)[d]	134 (20)[d]
Diastolic BP[b]	79 (13)	78 (13)	78 (14)	78 (13)	79 (13)[e]	78 (13)[e]
BMI[b]	29 (6)	30 (7)	29 (7)	29 (7)	30 (7)	31 (7)
Diabetes mellitus	15%	16%	10%	10%	16%	16%
Previous exposure to AHTs[c]	29% ACEI, 15% ARB, 30% BB	30% ACEI, 14% ARB, 30% BB	33% BB, 29% D	34% BB, 29% D	35% D, 30%, 18% ARB	35% D, 30% ACEI, 18% ARB
Outcomes						
	CCBs vs diuretics	*Odds ratio (95% CI)*	*CCBs vs RAS agents*	*Odds ratio (95% CI)*	*CCBs vs beta-blockers*	*Odds ratio (95% CI)*
Dementia	1.2% vs 1.0%	**1.19 (1.13-1.26)**	1.4% vs 1.1%	**1.24 (1.17-1.32)**	1.0% vs 1.1%	0.96 (0.90-1.01)
Alzheimer's disease	0.40% vs 0.29%	**1.39 (1.26-1.53)**	0.43% vs 0.40%	1.08 (0.91-1.20)	0.36% vs 0.35%	1.05 (0.96-1.16)
Vascular dementia	0.18% vs 0.11%	**1.54 (1.32-1.79)**	0.19% vs 0.15%	**1.26 (1.08-1.48)**	0.15% vs 0.14%	1.04 (0.90-1.21)
Other dementias	1.0% vs 0.89%	**1.14 (1.08-1.21)**	1.2% vs 1.0%	**1.26 (1.19-1.34)**	0.87% vs 0.91%	0.96 (0.90-1.02)
MCI	0.48% vs 0.38%	**1.26 (1.15-1.38)**	0.52% vs 0.43%	**1.21 (1.10-1.33)**	0.44% vs 0.40%	**1.11 (1.02-1.22)**
Movement disorders	1.8% vs 1.9%	**0.92 (0.88-0.96)**	2.0% vs 1.6%	**1.21 (1.16-1.28)**	1.6% vs 2.2%	**0.73 (0.70-0.76)**
Parkinson's disease	0.34% vs 0.34%	1.01 (0.91-1.13)	0.35% vs 0.33%	1.06 (0.95-1.19)	0.28% vs 0.39%	**0.73 (0.66-0.81)**
Cerebrovascular disease	4.5% vs 3.9%	**1.17 (1.14-1.21)**	4.9% vs 3.7%	**1.34 (1.29-1.38)**	3.7% vs 4.3%	**0.86 (0.84-0.89)**
Stroke	1.6% vs 1.3%	**1.25 (1.19-1.31)**	1.6% vs 1.2%	**1.40 (1.33-1.48)**	1.2% vs 1.4%	**0.87 (0.82-0.91)**
Cerebral haemorrhage	0.33% vs 0.27%	**1.25 (1.13-1.39)**	0.40% vs 0.23%	**1.77 (1.56-1.99)**	0.25% vs 0.33%	**0.77 (0.69-0.86)**
Any of the above	7.6% vs 6.8%	**1.12 (1.10-1.15)**	8.3% vs 6.5%	**1.29 (1.26-1.32)**	6.6% vs 7.6%	**0.85 (0.83-0.87)**
Negative control outcomes[f]		**0.89 (0.84-0.93)**		1.04 (0.97-1.11)		1.06 (1.00-1.13)
Most recent systolic BP	133 (17) vs 130 (18)		132 (18) vs 131 (18)		133 (17) vs 131 (18.2)	
Most recent diastolic BP	76 (11) vs 75 (11)		76 (11) vs 76 (11)		77 (11) vs 76 (11)	

[a]W: white. B/AA: black or African American. O/NK: other or not known.

[b]Most recent value before exposure period.

[c]ACEI: angiotensin converting enzyme inhibitors. ARB: angiotensin II inhibitors. BB: beta-blockers. D: diuretics.

[d]Standard difference = 0.16.

[e]Standard difference = 0.12.

[f]Mean of 12 negative control outcomes.