Supplementary

Table S1. Baseline demographics of antidopaminergic medication takers and non-antidopaminergic prior to propensity score matching.

	HD controls (non-antidopaminergic takers) (n= 2254)	HD antidopaminergic takers (n=2676)
Age (years)	52.6 (12.1)	53.7* (11.7)
CAG repeat length	43.5 (3.2)	43.7* (2.9)
Disease burden score (DBS)	391.9 (97.4)	412.7*** (85.4)
Total Functional capacity score (TFC)	9.2 (3.3)	7.9*** (3.3)
Time since diagnosis (years)	3.9 (5.4)	4.6*** (4.7)
Irritability (PBA) Max score 32	3 (4.6)	3.5*** (5.1)
Depression (PBA) Max score 48	4.8 (6.1)	5.6*** (6.5)
Apathy (PBA) Max score 16	2.6 (4)	4.1*** (4.5)
Total motor score UHDRS Max score 124	31.5 (20.3)	38.7*** (18.5)
Total chorea score UHDRS Max score 28	7.8 (5)	9.6*** (5.3)
MMSE Max score 30	25.8 (4.4)	24.8*** (4)
Composite cognitive Z-score	1.4 (6.5)	-1.2*** (5.5)

*Indicates a significant difference (p<0.005) when compared with the control non- antidopaminergic medication group. *** Indicates a significant difference (p<0.001) when compared with the control non-antidopaminergic medication group.

Table S2. Motor, psychiatric and cognitive assessments. Average annual mean change in score (standard deviation in brackets.)

	Non-antidopaminergic Medication Takers (n= 2136)	Antidopaminergic Medication Takers (n= 2578)	*p*
UHDRS total motor score	3.4 (7.3)	3.9 (7.9)	.125
UHDRS total chorea score	-1.3 (4.8)	-.0.2 (3.1)	.001
Irritability (PBA)	-0.1 (3.1)	-0.4 (3.4)	0.16
Depression (PBA)	-0.3 (4.5)	-0.4 (5)	.928
Apathy (PBA)	0.2 (3.2)	0.4 (3.3)	.363
Composite cognitive Z-score	0.5 (3.8)	-0.4 (3.9)	<0.001
Symbol Digit Modalities (SDMT)	-1.2 (4.1)	-2.2 (4.2)	<0.001
Verbal fluency	-0.6 (2.8)	-1 (2.6)	<0.001
Stroop naming	-2.9 (8.6)	-3.9 (8.9)	<0.001
Stroop word	-3 (9.6)	-4.6 (10.2)	<0.001
Stroop Interference	-1.8 (5.9)	-2.1 (5.4)	.029
Trail Making A score	.01 (6.1)	-0.5 (3.5)	.093
Trail Making A time	3.8 (25.1)	8.3 (30.5)	.015
Trail Making B score	-1.4 (7.7)	-1.7 (6)	.732
Trail Making B time	3.8 (34.3)	8.6 (37.4)	.001
MMSE	-0.5 (2.1)	-0.7 (2.4)	.778

*Indicates a significant difference (p<0.005) when compared with the control non- antidopaminergic medication group. *** Indicates a significant difference (p<0.001) when compared with the control non-antidopaminergic medication group.

Table S3. Reason for being prescribed antidopaminergic medication, showing number of participants with percentage in brackets

	HD antidopaminergic medication takers (n=466)	Pre and post antidopaminergic treatment (n=90)
Movement disorder	312 (67%)	52 (57.8%)
Chorea	209	38
Dyskinesia	69	12
Movement disorder (type not specified)	34	2
Mood disorder	130 (28%)	34 (37.8%)
Irritability/ anger/ agitation/ aggression	43	12
Depression/ affective disorder	31	6
Anxiety	13	5
Psychotic disorder (type not specified)	20	3
Other mood disorder	23	8
Insomnia/ sleep disorder	18 (4%)	2 (2.2%)
Other	7 (1%)	2 (2.2%)

Table S4. Group1. Baseline score for each cognitive task per group (standard deviation in brackets with range below)

	HD controls (non-antidopaminergic takers) (n= 466)	HD antidopaminergic takers (n=466)
Composite cognitive Z-score	1.3 (5.3) -21.7 - 18.9	-1.3 (5.8) -32.4 – 16.7
Symbol Digit Modality (SDMT) Max score 110	28 (10.5) 4-69	23.1* (10.4) 0-65
Verbal Fluency Max score 32	14.3 (5) 2-42	12.4* (4.9) 1-32
Stroop Naming	48.4 (13.8) 11-130	41.6* (14.2) 11-97
Stroop Word	63.9 (18.4) 12-120	56.6* (19.2) 0-125
Stroop interference	27.3 (10.8) 1-74	22.6* (9.8) 0-62
Trail Making A score Max score 25	24.9 (1.5) 0 -25	24.7 (2.4) 0-25
Trail Making A time (seconds) Max time 240s	54.3 (30.3) 16-240	65.4* (39.3) 4-240

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Trail Making B score Max score 25	23.6 (13) 0 -25	21.3* (7) 0 -25
Trail Making B time (seconds) Max time 240s	136.7 (68.3) 18-240	150.5* (69.7) 0-240

*Indicates a significant difference (p<0.001) when compared with the control non- antidopaminergic medication group

Table S5. Group2. Baseline score for each cognitive task per group (standard deviation in brackets with range below)

	Control group (those not taking dopamine medication but assessed at the same time intervals) (n=103)	Pre and post antidopaminergic treatment group (n=90)
Composite cognitive Z-score	1.5 (5.4) -11.2 - 15.8	-1.7*** (4.8) -19.2 – 11.3
Symbol Digit Modality (SDMT) Max score 110	30.5 (12.1) 0-59	25.7* (10.7) 7-51
Verbal Fluency Max score 32	14.5 (5.5) 0-27	12.6* (4.6) 4-26
Stroop Naming	51.8 (18.1) 0-100	44.7* (15.5) 18-83
Stroop Word	67.3 (23.4) 0-116	56* (19.5) 18-100
Stroop interference	30.9 (11.5) 4-64	24.1*** (9.9) 1-49
Trail Making A score Max score 25	25 (0.1) 24-25	24.6 (3) 0-25
Trail Making A time (seconds) Max time 240s	47.2 (23.9) 18-180	65* (39) 15-225
Trail Making B score Max score 25	23.4 (4.6) 0-25	22.2* (5.7) 0-25
Trail Making B time (seconds) Max time 240s	115.9 (66.9) 24-240	154.8* (66) 41-240

Table S6. Average annual mean change in score (standard deviation in brackets) for each individual cognitive task per group.

	Non-antidopaminergic Medication Takers (n= 466)	Antidopaminergic Medication Takers (n= 466)	*p*	Cohen's d
Composite cognitive Z-score	0.8 (3.5)	-0.8*** (4.8)	<0.001	0.38
Symbol Digit Modalities (SDMT)	-1.1 (3.8)	-2.7 (4.6)	<0.001	0.38
Verbal fluency Max score 32	-0.6 (2.8)	-1.3 (2.9)	<0.001	0.25
Stroop naming	-3.2 (7.7)	-4.4 (7.6)	0.019	0.16
Stroop word	-3.1 (9.2)	-5.2 (9.5)	<0.001	0.22
Stroop Interference	-1.8 (6)	-2.3 (5.2)	.029	0.09
Trail Making A score	-0.1 (1.6)	-0.2 (2.9)	0.325	0.04
Trail Making A time	2.4 (18.5)	8.8 (27.1)	<0.001	0.28
Trail Making B score	-0.2 (3.4)	-0.8 (4.6)	0.078	0.15
Trail Making B time	4 (37.6)	9.5 (39.1)	0.070	0.14
MMSE	-0.2 (1.8)	-0.6 (2.2)	0.100	0.20

Table S7. Group 2. Average annual mean change in score (standard deviation in brackets) for each individual cognitive task per group.

	Control group (Time 1) (n=103)	Control group (Time 2) (n=103)	*p*	Cohen's d	Pre antidopaminergic medication (Time 1) (n=90)	Post antidopaminergic Medication (Time 2) (n=90)	*p*	Cohen's d
Composite cognitive Z-score	0.4 (3.9)	-0.3 (4)	0.1993	0.18	0.8 (3.4)	-0.7*** (3.4)	0.001	0.44
Symbol Digit Modalities (SDMT)	-0.8 (5.3)	-2.3 (5.1)	0.09	0.29	-2.6 (5.8)	-3.5 (6.6)	0.395	0.14
Verbal fluency	-0.4 (3.6)	-0.4 (3.8)	0.8754	0	0.2 (4.7)	-1.5 (3.9)	0.019	0.39
Stroop naming	-3.3 (8.2)	-2.6 (9.3)	0.5947	0.08	-1.7 (9.9)	-2.2 (7.4)	0.710	0.06
Stroop word	-4.7 (9.4)	-6 (11.1)	0.3923	0.13	0.2 (12.1)	-3.9 (11.6)	0.038	0.35
Stroop Interference	-1.6 (6.7)	-2 (7)	0.6841	0.06	1.3 (6.7)	-2.7 (7.4)	0.004	0.57
Trail Making A score	0.02 (0.1)	0 (0)	0.3215	0.01	-0.02 (0.2)	-0.5 (3)	0.3487	0.23
Trail Making A time (seconds)	-0.9 (19.2)	2.3 (12.4)	0.2616	0.20	0.8 (26)	9.6 (18.4)	0.054	0.39
Trail Making B score	0.5 (4.1)	0.2 (2.6)	0.6669	0.09	0.4 (5)	-2.3 (5.8)	0.040	0.50
Trail Making B time (seconds)	1.3 (55.3)	11.7 (36.2)	0.2292	0.22	-5 (44.7)	17.3 (37.3)	0.026	0.50
MMSE Max score 30	-0.2 (2.2)	-0.3 (2)	0.8248	0.05	0.3 (2.7)	-0.8 (3.5)	0.241	0.35