APPENDIX [posted as supplied by author]

Table A **Dose conversion to chlorpromazine equivalencies** (based on references [1-3])

Antipsychotic Agent	Chlorpromazine (CPZ) equivalencies (agent * *FACTOR* = 100 mg of CPZ)
Haloperidol	50
Aripiprazole	13.3
Olanzapine	20
Quetiapine	1.3
Risperidone	50
Ziprasidone	1.7

Table B **Dose distribution**

	Mg chlorpromazine equivalencies (mg actual dose)									
%-ile	**Haloperidol**		**Olanzapine**		**Quetiapine**		**Risperidone**		**All antipsychotics**	
10	25	(0.5)	50	(2.5)	33	(25)	13	(0.25)	14	
20	50	(1.0)	50	(2.5)	33	(25)	13	(0.25)	25	
30	50	(1.0)	50	(2.5)	33	(25)	25	(0.5)	33	
40	50	(1.0)	50	(2.5)	33	(25)	25	(0.5)	50	
50	100	(2.0)	50	(2.5)	52	(40)	25	(0.5)	50	
60	100	(2.0)	100	(5.0)	65	(50)	25	(0.5)	50	
70	150	(3.0)	100	(5.0)	65	(50)	50	(1.0)	65	
80	250	(5.0)	100	(5.0)	72	(55)	50	(1.0)	100	
90	375	(7.5)	100	(5.0)	130	(100)	50	(1.0)	100	
Dose groups	**Mg cpz**	**% of pts**	**Mg cpz**	**% of pts**	**Mg cpz**	**% of pts**	**Mg cpz**	**% of pts**	**Mg cpz**	**% of pts**
Low	]0,50]	41.4%	]0,50]	55.6%	]0,50[	49.6%	]0,25]	64.1%	]0,50[	39.9%
Medium	]50,200]	36.9%	]50,100]	34.9%	[50,75]	30.7%	]25,50]	25.9%	[50,75]	35.9%
High	>200	21.7%	>100	9.5%	>75	19.6%	>50	10.0%	>75	24.2%

%-ile: Percentile; pts: patients

Table C Additional characteristics for residents initiating antipsychotics during a nursing home stay

	Haloperidol		Aripiprazole		Olanzapine		Quetiapine		Risperidone		Ziprasidone	
	N or mean	% or SD	N or mean	% or SD	N or mean	% or SD	N or mean	% or SD	N or mean	% or SD	N or mean	% or SD
Patient-level Characteristics												
Residents	5,904		1,849		22,919		15,776		27,936		1,061	
Year of index date												
2001[(1)]	360	6.1%	0	0.0%	1,341	5.9%	340	2.2%	1,550	5.5%	11	1.0%
2002	1,085	18.4%	8	0.4%	5,467	23.9%	1,348	8.5%	5,472	19.6%	51	4.8%
2003	1,283	21.7%	271	14.7%	7,207	31.4%	3,253	20.6%	6,217	22.3%	214	20.2%
2004	1,410	23.9%	733	39.6%	5,410	23.6%	5,004	31.7%	7,512	26.9%	377	35.5%
2005	1,766	29.9%	837	45.3%	3,494	15.2%	5,831	37.0%	7,185	25.7%	408	38.5%
Education												
less than high school	2,609	44.2%	754	40.8%	9,249	40.4%	6,327	40.1%	11,855	42.4%	502	47.3%
high school	1,534	26.0%	556	30.1%	6,520	28.4%	4,670	29.6%	7,643	27.4%	282	26.6%
greater than high school	610	10.3%	238	12.9%	2,509	10.9%	1,927	12.2%	3,042	10.9%	99	9.3%
missing	1,151	19.5%	301	16.3%	4,641	20.2%	2,852	18.1%	5,396	19.3%	178	16.8%
Other comorbidities												
Obesity	143	2.4%	70	3.8%	420	1.8%	339	2.1%	544	1.9%	35	3.3%
Epilepsy	379	6.4%	142	7.7%	1,434	6.3%	1,073	6.8%	1,745	6.2%	83	7.8%
Facility-level Characteristics												
Size												
small (<100 beds)	2,131	36.1%	504	27.3%	6,905	30.1%	4,493	28.5%	8,571	30.7%	332	31.3%
medium (100-200 beds)	3,094	52.4%	1,034	55.9%	13,095	57.1%	9,069	57.5%	15,642	56.0%	625	58.9%
large (>=200 beds)	679	11.5%	311	16.8%	2,919	12.7%	2,214	14.0%	3,723	13.3%	104	9.8%
Occupancy rate	84.9%	13.9%	86.1%	13.4%	86.1%	13.5%	86.7%	13.1%	85.8%	13.9%	84.3%	14.1%
Organizational structure												
Hospital based	318	5.4%	39	2.1%	914	4.0%	624	4.0%	1,292	4.6%	46	4.3%
Part of multi-facility ownership structure	3,288	55.7%	1,044	56.5%	13,330	58.2%	8,782	55.7%	15,539	55.6%	568	53.5%
Ownership												
Government	333	5.6%	138	7.5%	1,259	5.5%	959	6.1%	1,751	6.3%	65	6.1%
For profit	4,188	70.9%	1,328	71.8%	16,360	71.4%	10,965	69.5%	19,570	70.1%	786	74.1%
Nonprofit ownership	1,383	23.4%	383	20.7%	5,300	23.1%	3,852	24.4%	6,615	23.7%	210	19.8%

	Haloperidol		Aripiprazole		Olanzapine		Quetiapine		Risperidone		Ziprasidone	
	N or mean	% or SD	N or mean	% or SD	N or mean	% or SD	N or mean	% or SD	N or mean	% or SD	N or mean	% or SD
Alzheimer's special care unit	1,213	20.5%	466	25.2%	5,638	24.6%	3,819	24.2%	6,439	23.0%	257	24.2%
Non-Alzheimer's special care unit	347	5.9%	104	5.6%	1,259	5.5%	919	5.8%	1,571	5.6%	46	4.3%
Quality Indicators												
% residents bedfast	4.9%	6.4%	4.5%	5.5%	4.5%	6.0%	4.6%	6.1%	4.6%	6.0%	5.9%	6.6%
% residents chair fast	57.3%	17.8%	58.3%	17.6%	57.2%	18.1%	57.6%	17.6%	57.2%	17.8%	55.9%	16.9%
% residents with facility acquired bedsores	3.7%	3.6%	3.7%	3.5%	3.6%	3.5%	3.6%	3.1%	3.6%	3.4%	3.8%	3.3%
% residents with restraints	7.2%	8.0%	6.3%	7.1%	7.2%	7.9%	6.7%	7.4%	6.9%	7.6%	7.2%	8.4%
% residents on psychoactive medicines	61.5%	13.8%	64.3%	12.6%	61.4%	14.1%	63.4%	13.1%	61.9%	13.6%	64.7%	12.8%
Total number of deficiencies	6.8	5.8	6.4	5.2	6.8	5.8	6.7	5.6	6.6	5.7	7.0	5.3
Staffing												
Team-based physician care	1,441	24.4%	571	30.9%	6,544	28.6%	4,810	30.5%	7,578	27.1%	244	23.0%
No staff physicians available[(2)]	1,005	17.0%	257	13.9%	3,413	14.9%	2,187	13.9%	4,418	15.8%	206	19.4%
Mental health staffing available	2,847	48.2%	1,078	58.3%	12,255	53.5%	8,984	56.9%	14,583	52.2%	436	41.1%
Residents												
% residents with dementia	45.7%	17.0%	47.6%	16.8%	46.6%	17.2%	47.5%	17.0%	46.8%	16.9%	46.8%	16.6%
% residents with psychiatric diagnosis	18.6%	14.3%	21.6%	15.3%	18.1%	13.7%	19.2%	14.4%	18.6%	14.0%	21.2%	14.8%
% residents with depression	46.2%	21.0%	47.8%	21.1%	45.0%	20.5%	47.1%	20.6%	45.5%	20.8%	48.4%	21.5%
% residents on Medicaid	68.2%	17.0%	68.9%	15.8%	68.0%	16.2%	67.5%	16.2%	68.0%	16.4%	70.0%	15.5%
% residents on Medicare	11.2%	11.3%	11.8%	9.5%	11.5%	10.6%	12.0%	10.4%	11.7%	11.0%	11.0%	9.6%
% private pay/private insurance residents	20.6%	14.2%	19.3%	13.4%	20.5%	13.7%	20.5%	13.7%	20.4%	13.7%	19.0%	13.0%

[(1)] Fewer residents entered the cohort in 2001 because the first six months were used to define the baseline covariates. The first possible cohort entry date was therefore July 1st, 2001.

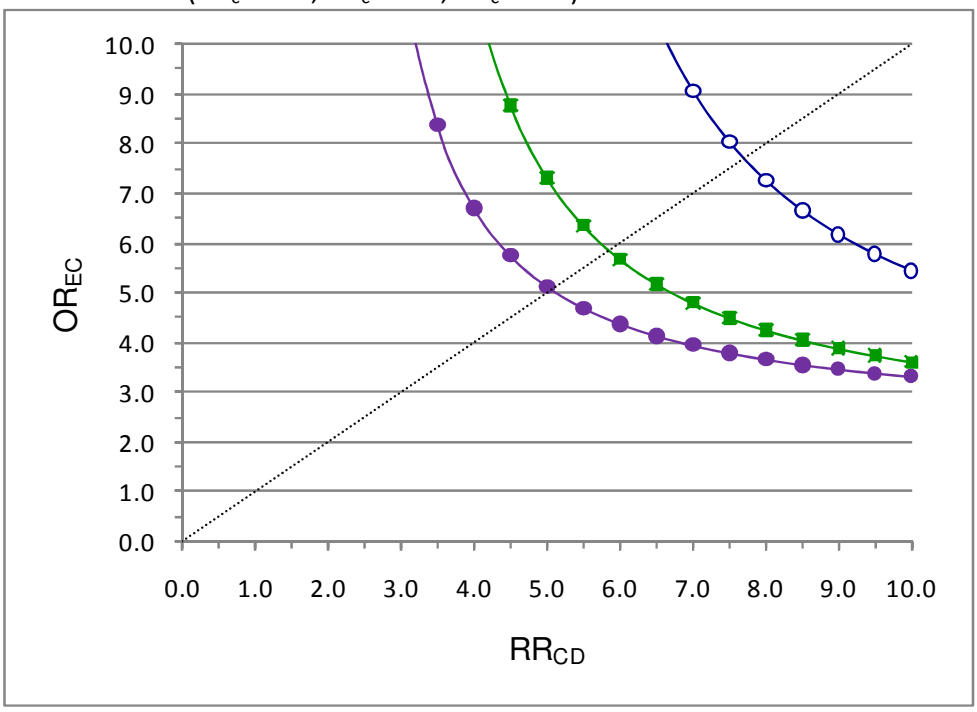
[(2)] No physician on staff who supervises the care of residents when the attending physician is unavailable.

Table D PS-adjusted stratified analyses of death within 180 Days

	Haloperidol		Aripiprazole		Olanzapine		Quetiapine		Ziprasidone	
	HR	95%CI	HR	95%CI	HR	95%CI	HR	95%CI	HR	95%CI
DEMENTIA										
Non-cancer mortality	2.10	(1.89 to 2.35)	0.95	(0.77 to 1.18)	1.02	(0.95 to 1.10)	0.86	(0.78 to 0.93)	0.91	(0.68 to 1.22)
Cause-specific mortality	1.80	(1.53 to 2.12)	0.94	(0.68 to 1.28)	1.00	(0.90 to 1.11)	0.88	(0.78 to 0.99)	0.85	(0.55 to 1.30)
Circulatory system	2.25	(1.64 to 3.10)	0.46	(0.19 to 1.13)	0.97	(0.77 to 1.21)	0.73	(0.55 to 0.96)	0.57	(0.18 to 1.80)
Cerebrovascular diseases	2.73	(2.06 to 3.62)	1.41	(0.85 to 2.34)	1.09	(0.90 to 1.32)	0.81	(0.64 to 1.03)	1.15	(0.56 to 2.36)
Respiratory system	2.31	(1.94 to 2.74)	0.82	(0.57 to 1.19)	1.03	(0.91 to 1.16)	0.84	(0.73 to 0.97)	0.91	(0.56 to 1.47)
Other	2.10	(1.89 to 2.35)	0.95	(0.77 to 1.18)	1.02	(0.95 to 1.10)	0.86	(0.78 to 0.93)	0.91	(0.68 to 1.22)
NO DEMENTIA										
Non-cancer mortality	1.99	(1.69 to 2.34)	0.72	(0.49 to 1.05)	0.99	(0.89 to 1.11)	0.70	(0.61 to 0.82)	0.93	(0.60 to 1.46)
Cause-specific mortality	1.96	(1.57 to 2.45)	0.63	(0.36 to 1.10)	1.01	(0.86 to 1.17)	0.63	(0.51 to 0.78)	0.98	(0.53 to 1.79)
Circulatory system	2.17	(1.33 to 3.53)			0.66	(0.45 to 0.97)	0.52	(0.31 to 0.86)	2.01	(0.80 to 5.06)
Cerebrovascular diseases	2.25	(1.53 to 3.31)	1.06	(0.49 to 2.29)	0.95	(0.72 to 1.25)	0.65	(0.46 to 0.94)	1.19	(0.43 to 3.25)
Respiratory system	1.89	(1.38 to 2.59)	0.67	(0.33 to 1.37)	0.99	(0.80 to 1.22)	0.86	(0.67 to 1.10)	0.73	(0.30 to 1.80)
Other	1.99	(1.69 to 2.34)	0.72	(0.49 to 1.05)	0.99	(0.89 to 1.11)	0.70	(0.61 to 0.82)	0.93	(0.60 to 1.46)
BEHAVIORAL DISTURBANCES										
Non-cancer mortality	1.97	(1.65 to 2.35)	1.11	(0.82 to 1.52)	1.05	(0.95 to 1.18)	0.89	(0.78 to 1.02)	1.18	(0.80 to 1.74)
Cause-specific mortality	1.77	(1.36 to 2.29)	1.05	(0.65 to 1.67)	1.07	(0.91 to 1.25)	0.86	(0.72 to 1.04)	1.14	(0.65 to 2.00)
Circulatory system	2.00	(1.13 to 3.53)	0.49	(0.12 to 2.03)	1.19	(0.83 to 1.70)	0.86	(0.57 to 1.30)	1.34	(0.41 to 4.30)
Cerebrovascular diseases	2.71	(1.74 to 4.23)	1.69	(0.80 to 3.57)	1.04	(0.76 to	0.93	(0.65 to 1.33)	1.28	(0.46 to

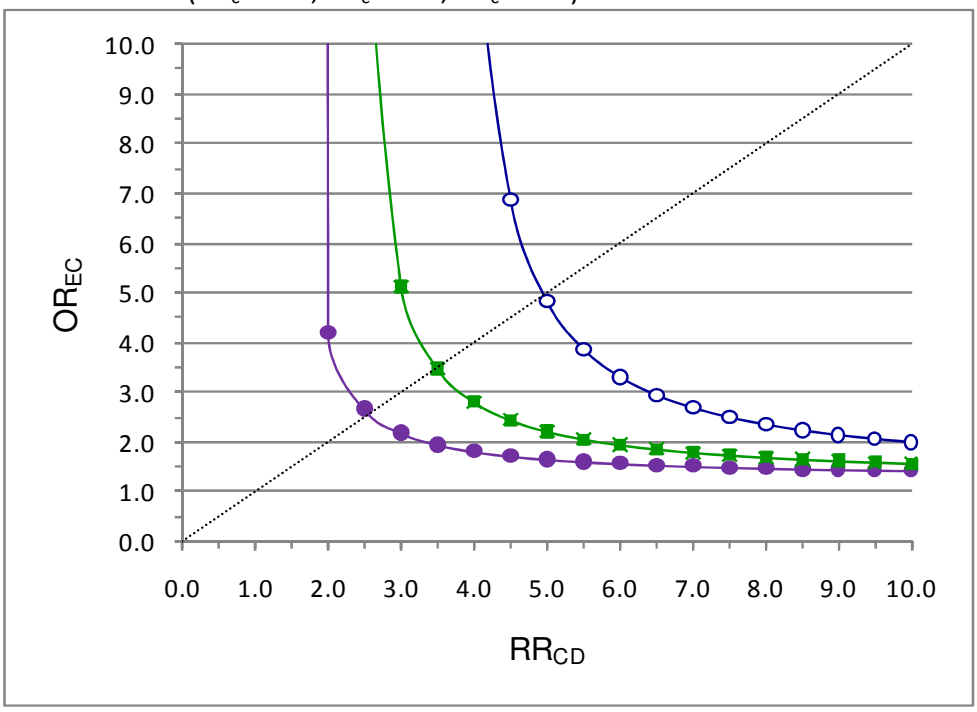
						1.41)				3.54)
Respiratory system	1.99	(1.50 to 2.65)	1.02	(0.62 to 1.68)	1.05	(0.88 to 1.25)	0.92	(0.75 to 1.13)	1.20	(0.63 to 2.27)
Other	1.97	(1.65 to 2.35)	1.11	(0.82 to 1.52)	1.05	(0.95 to 1.18)	0.89	(0.78 to 1.02)	1.18	(0.80 to 1.74)
NO BEHAVIORAL DISTURBANCES										
Cause-specific mortality	2.11	(1.89 to 2.34)	0.79	(0.62 to 1.00)	1.00	(0.93 to 1.08)	0.78	(0.71 to 0.85)	0.80	(0.58 to 1.10)
Circulatory system	1.89	(1.62 to 2.20)	0.77	(0.55 to 1.07)	0.98	(0.88 to 1.09)	0.78	(0.69 to 0.89)	0.77	(0.49 to 1.21)
Cerebrovascular diseases	2.29	(1.69 to 3.10)	0.28	(0.09 to 0.87)	0.78	(0.62 to 0.98)	0.60	(0.45 to 0.81)	0.90	(0.36 to 2.20)
Respiratory system	2.48	(1.90 to 3.24)	1.16	(0.69 to 1.94)	1.05	(0.87 to 1.27)	0.70	(0.55 to 0.89)	1.16	(0.57 to 2.37)
Other	2.29	(1.91 to 2.74)	0.66	(0.42 to 1.02)	1.01	(0.89 to 1.14)	0.81	(0.70 to 0.94)	0.70	(0.39 to 1.24)

Figure A **Haloperidol - Sensitivity analysis of residual confounding (Rule-out approach)**: Example for estimated RR=1.81 and different levels of confounder prevalence (○P_c=0.05; ■P_c=0.10; ●P_c=0.25)



The selected RR (hdPS-adjusted HR) represents the most conservative estimate.
Each line splits the area into two. The upper right area represents all combinations of OR_{EC} and RR_{CD} that would create confounding by an unmeasured factor strong enough to move the point estimate of RR to the null (RR=1) or beyond. The area to the lower left represents all parameter combinations that would not be able to move the estimated RR to the null.

Figure B **Quetiapine - Sensitivity analysis of residual confounding (Rule-out approach)**: Example for estimated RR=0.83 and different levels of confounder prevalence (○P_c=0.05; ■P_c=0.10; ●P_c=0.25)



The selected RR (hdPS-adjusted HR) represents the most conservative estimate.
Each line splits the area into two. The upper right area represents all combinations of OR_{EC} and RR_{CD} that would create confounding by an unmeasured factor strong enough to move the point estimate of RR to the null (RR=1) or beyond. The area to the lower left represents all parameter combinations that would not be able to move the estimated RR to the null.

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