

Appendix Table 1. Thirty-one comorbidities included as covariates in all regressions

- Severe infection
- Other infectious disease & pneumonias
- Metastatic cancer/acute leukemia
- Severe cancer
- Other cancers
- Diabetes mellitus
- Protein-calorie malnutrition
- End-stage liver disease
- Severe hematological disorders
- Alcohol abuse
- Psychiatric comorbidity
- Hemiplegia, paraplegia, paralysis
- Seizure disorders
- Congestive heart failure
- Coronary atherosclerosis or angina
- Specified arrhythmias
- Chronic obstructive pulmonary disease
- Other chronic lung disorders
- Dialysis
- Decubitus ulcer or chronic skin ulcer
- Septicemia/shock
- Disorders of fluid, electrolytes
- Iron deficiency or other anemias
- Cardiorespiratory failure or shock
- Acute renal failure
- Pancreatic disease
- Rheumatoid arthritis
- Respirator dependence/tracheostomy
- Transplants
- Coagulation /hematologic disorders
- Hip fracture/dislocation

Appendix to “Effect of hospital and post-acute care provider participation in accountable care organizations on patient outcomes and Medicare spending” by Agarwal and Werner 3

Total hip or knee replacement	8.4	0.3	0.2	0.85	13.2	2.5	1.1	0.06	13.9	-1.9	-2.5	0.50
Sepsis	6.3	1.4	1.8	0.33	3.4	1.0	1.3	0.20	2.1	0.7	1.0	0.38
Congestive heart failure	5.2	0.4	0.0	0.19	6.2	-0.3	0.0	0.40	2.3	0.4	0.5	0.69
Urinary tract infection	4.4	-0.4	-0.4	0.87	2.5	0.0	-0.1	0.79	1.3	0.3	0.2	0.65
Hip fracture	5.6	0.0	-0.1	0.85	0.9	0.0	-0.1	0.77	9.8	-0.4	-1.3	0.22
Pneumonia	4.4	0.4	0.3	0.64	4.1	0.4	0.5	0.84	1.5	-0.2	0.5	0.02

* Change from 2010 to 2013 among patients admitted to a hospital and PAC provider that participated in an ACO during the study period

** Change from 2010 to 2013 among patients admitted to a hospital and PAC provider that did not participate in an ACO during the study period

*** P-value for difference in change over time between hospitals and PACs that participated in ACOs versus those that did not participate

Appendix Table 3. Differences in trends in outcomes between hospitals that ever join an ACO and hospitals that never join an ACO in pre-ACO period (2010-2011).

	SNF cohort		HH cohort		IRF cohort	
	Difference in trend	P-value	Difference in trend	P-value	Difference in trend	P-value
30-day readmission or death	-0.0005	0.61	-0.0003	0.76	-0.003	0.29
Medicare spending on episode	-58.1	0.12	18.1	0.56	118.7	0.22
Length of stay of episode	-0.08	0.06	-0.11	0.07	0.07	0.17

Differences in trends in outcomes between hospitals that ever join an ACO with each PAC provider and hospitals that never join an ACO with each PAC provider in pre-ACO period (2010-2011).

	SNF cohort		HH cohort		IRF cohort	
	Difference in trend	P-value	Difference in trend	P-value	Difference in trend	P-value
30-day readmission or death	-0.005	0.39	-0.003	0.09	0.000	0.99
Medicare spending on episode	124.2	0.86	12.5	0.88	123.3	0.36
Length of stay of episode	-0.08	0.27	-0.16	0.11	0.05	0.48

Appendix Table 4. Adjusted change in outcomes after a hospital or post-acute care provider joined an ACO, adjusting for PAC provider characteristics.*

	Skilled nursing facility cohort			
	(n=3,503,296)			
	Hospital in ACO		Hospital and skilled nursing facility in ACO	
	Absolute change [95% CI]	P- value	Absolute change [95% CI]	P- value
30-day readmission or mortality (%)	-0.5 [-0.9 to -0.1]	0.01	-0.8 [-2.2 to 0.7]	0.30
30-day mortality (%)	-0.1 [-0.4 to 0.2]	0.61	-0.2 [-1.4 to 1.0]	0.73
Medicare spending on total episode (\$)	-145 [-279 to -11]	0.03	-903 [-1499 to -308]	0.003
Medicare spending on hospitalization (\$)	-60 [-141 to 22]	0.15	-136 [-334 to 62]	0.18
Medicare spending on PAC (\$)	49 [-29 to 128]	0.22	-482 [-885 to -79]	0.02
Length of stay in total episode (days)	0.0 [-0.1 to 0.3]	0.38	-1.8 [-2.6 to -0.9]	<.001
Length of stay in hospital (days)	0.0 [-0.0 to 0.1]	0.70	0.2 [-0.1 to 0.4]	0.19
Length of stay in PAC (days)	0.2 [-0.0 to 0.3]	0.07	-1.7 [-2.6 to -0.8]	<.001

	Home health cohort			
	(n=1,597,751)			
	Hospital in ACO		Hospital and home health agency in ACO	
	Absolute change [95% CI]	P- value	Absolute change [95% CI]	P- value
30-day readmission or mortality (%)	-0.4	0.03	-0.4	0.26

	[-0.8 to -0.0]		[-1.1 to 0.3]	
30-day mortality (%)	-0.1	0.27	-0.1	0.62
	[-0.3 to 0.0]		[-0.5 to 0.3]	
Medicare spending on total episode (\$)	-60	0.33	-137	0.24
	[-183 to 61]		[-366 to 93]	
Medicare spending on hospitalization (\$)	-44	0.38	-86	0.41
	[-142 to 55]		[-291 to 119]	
Medicare spending on PAC (\$)	41	0.004	-30	0.08
	[13 to 68]		[-4 to 63]	
Length of stay for total episode (days)	-0.2	0.34	-0.6	0.14
	[-0.5 to 0.2]		[-1.4 to 0.2]	
Length of stay in hospital (days)	0.0	0.34	0.0	0.82
	[-0.1 to 0.0]		[-0.1 to 0.1]	
Length of stay in PAC (days)	-0.1	0.40	-0.7	0.04
	[-0.4 to 0.2]		[-1.3 to -0.0]	

Inpatient rehabilitation cohort

(n=445,264)

	Hospital in ACO		Hospital and inpatient rehabilitation facility in ACO	
	Absolute change [95% CI]	P-value	Absolute change [95% CI]	P-value
30-day readmission or mortality (%)	-0.5 [-1.4 to 0.4]	0.29	0.4 [-0.9 to 1.7]	0.55
30-day mortality (%)	-0.5 [-1.0 to -0.0]	0.04	0.1 [-0.6 to 0.8]	0.79
Medicare spending on total episode (\$)	227 [-178 to 631]	0.27	-10 [-555 to 535]	0.97
Medicare spending on hospitalization (\$)	60 [-191 to 311]	0.64	-140 [-371 to 91]	0.24
Medicare spending on PAC (\$)	43 [-186 to 271]	0.71	4 [-372 to 380]	0.98
Length of stay in total episode (days)	0.3 [-0.1 to 0.7]	0.15	0.3 [-0.3 to 1.0]	0.28
Length of stay in hospital (days)	-0.1	0.13	-0.1	0.12

	[-0.2 to 0.0]		[-0.3 to 0.0]	
Length of stay in PAC (days)	0.1	0.24	0.2	0.28
	[-0.1 to 0.3]		[-0.1 to 0.4]	

*SNF covariates include number of beds, hospital owned, profit status, and overall star rating; HH covariates include number of full-time equivalent staff, hospital owned, and profit status; IRF covariates include number of beds, hospital owned, and profit status.

Appendix Table 5. Characteristics of hospitals participating in ACOs and not in ACOs among a propensity-score matched cohort of hospitals, using 1:5 matching without replacement

	Hospitals participating in ACO with or without PAC	Hospitals not participating in an ACO
Number of hospitals, n (%)	293 (16.7%)	1,465 (83.3%)
Number of beds, n (%)		
<100	52 (17.8%)	260 (17.8%)
100-250	99 (33.9%)	496 (33.9%)
250+	142 (48.4%)	709 (48.4%)
Profit status, n (%)		
For profit	23 (7.9%)	115 (7.9%)
Not for profit	240 (81.9%)	1200 (81.9%)
Public	30 (10.2%)	150 (10.2%)
Rural, n (%)	41 (14.0%)	204 (13.9%)
Teaching status, n (%)		
Non-teaching	169 (57.7%)	847 (57.8%)
Minor teaching	69 (23.6%)	344 (23.5%)
Major teaching	55 (18.8%)	274 (18.7%)

Appendix Table 6. Adjusted change in outcomes after a hospital or post-acute care provider joined an ACO in cohort of propensity-score matched hospitals

	Skilled nursing facility cohort			
	(n=2,327,605)			
	Hospital in ACO		Hospital and skilled nursing facility in ACO	
	Absolute change [95% CI]	P- value	Absolute change [95% CI]	P- value
30-day readmission or mortality (%)	-0.5 [-.86 to -.05]	0.03	-1.5 [-3.0 to -.06]	0.04
30-day mortality (%)	-0.1 [-.39 to .22]	0.60	-0.61 [-1.87 to .66]	0.35
Medicare spending on total episode (\$)	-224 [-362 to -85]	0.002	-1624 [-2379 to -869]	<.001
Medicare spending on hospitalization (\$)	-82 [-166 to 2]	0.06	-174 [-371 to 24]	0.09
Medicare spending on PAC (\$)	-10 [-91 to 72]	0.82	919 [-1486 to -351]	0.002
Length of stay in total episode (days)	0.0 [-0.2 to 0.1]	0.62	-3.2 [-4.4 to -2.1]	<.001
Length of stay in hospital (days)	0.0 [-0.1 to 0.1]	0.72	0.1 [-0.1 to 0.4]	0.29
Length of stay in PAC (days)	0.0 [-0.2 to 0.2]	0.87	-3.0 [-4.2 to -1.8]	<.001

	Home health cohort			
	(n=1,068,940)			
	Hospital in ACO		Hospital and home health agency in ACO	
	Absolute change [95% CI]	P- value	Absolute change [95% CI]	P- value
30-day readmission or mortality (%)	-0.4	0.04	-0.4	0.24

	[-0.85 to -0.02]		[-1.11 to 0.3]	
30-day mortality (%)	-0.1	0.22	-0.1	0.65
	[-.35 to .07]		[-.54 to .34]	
Medicare spending on total episode (\$)	-83	0.20	-231	0.04
	[-210 to 43]		[-454 to -7]	
Medicare spending on hospitalization (\$)	-50	0.33	-91	0.38
	[-152 to 52]		[-298 to 114]	
Medicare spending on PAC (\$)	35	0.02	-49	0.01
	[7 to 63]		[-87 to -11]	
Length of stay for total episode (days)	-0.2	0.25	-1.7	<.001
	[-0.5 to 0.1]		[-2.3 to -1.0]	
Length of stay in hospital (days)	0.0	0.34	0.0	0.87
	[-0.1 to 0.0]		[-0.1 to 0.1]	
Length of stay in PAC (days)	-0.1	0.37	-1.7	<.001
	[-0.5 to 0.2]		[-2.2 to -1.2]	

Inpatient rehabilitation cohort

(n=445,264)

**Hospital and inpatient
rehabilitation facility in
ACO**

Hospital in ACO

	Absolute change [95% CI]	P- value	Absolute change [95% CI]	P- value
30-day readmission or mortality (%)	-0.4 [-1.2 to 0.6]	0.45	0.5 [-0.8 to 1.9]	0.45
30-day mortality (%)	-0.4 [-.91 to .01]	0.10	0.2 [-.47 to .88]	0.55
Medicare spending on total episode (\$)	207 [-204 to 617]	0.32	-63 [-613 to 487]	0.82
Medicare spending on hospitalization (\$)	24 [-227 to 276]	0.85	-164 [-402 to 73]	0.18
Medicare spending on PAC (\$)	77 [-157 to 310]	0.52	-47 [-436 to 342]	0.81
Length of stay in total episode (days)	0.3 [-0.2 to 0.7]	0.30	0.6 [-0.0 to 1.3]	0.07
Length of stay in hospital (days)	-0.1 [-0.2 to 0.0]	0.11	-0.1 [-0.3 to 0.0]	0.17

Length of stay in PAC (days)	0.1	0.28	0.1	0.39
	[-0.1 to 0.3]		[-0.2 to 0.4]	
