CMS Bundled Payments for Care Improvement Initiative Models 2-4: Year 4 Evaluation & Monitoring Annual Report – Appendices

Prepared for:

CMS

Prepared by:

The Lewin Group

With our partners:

Abt Associates, GDIT, Telligen, and Optum

June 2018

CMS Bundled Payments for Care Improvement Initiative Models 2-4: Year 4 Evaluation & Monitoring Annual Report

The Lewin Group

Authors:

Laura Dummit, Grecia Marrufo, Jaclyn Marshall, Tristan Ackerman, Sarah Bergman, Aylin Bradley, Rebecca Cherry, Inna Cintina, Daniel Cooper, Syvart Dennen, Philip Dishuck, Ayah Fannoun, Megan Hyland, Gina Gerding, Dan Gregory, Catherine Griffin, Ashley Johnson, Susan Joy, Jordan Kahn, Jon Kelly, Alex Lampert, Karla Lopez de Nava, Brandon Maughan, Court Melin, Sebastian Negrusa, Julie Somers, Dan Strubler, Katarina Swanson, Ellen Tan, Kyi-Sin Than, Peter Weidner, Ayanna Williams, Grace Yang, David Zhang, Dean Farley, Ian Breunig, Andrea Hassol, Qian Gu, Sean McClellan, Matt Trombley, Christine LaRocca, Becky Blystone, Colleen Kummet

Lewin's address:

3130 Fairview Park Dr, Suite 500, Falls Church, VA 22042

Federal Project Officer:

Daver Kahvecioglu
Division of Data, Research, and Analytic Methods (DRAM)
Research and Rapid Cycle Evaluation Group (RREG),
Center for Medicare and Medicaid Innovation (CMMI),
Centers for Medicare and Medicaid Services (CMS)
This project was funded by the Centers for Medicare & Medicaid Services under contract no. HHSM-500-2011-00001I Task Order HHSM-500-T0007.

List of Appendices

Appendix A: Glossary of Terms & Acronym List

Exhibit A.1: Glossary

Name	Definition
30-, 90-, 120-day Post-Discharge Period (PDP)	The 30, 90, or 120 days following discharge from the anchor hospitalization (Models 2 and 4) or the qualifying hospital stay (Model 3)
30-, 90-day Post-Bundle Period (PBP)	The 30 or 90 days following the end of the bundle period.
Acute care hospital (ACH)	A health care facility that provides inpatient medical care and other related services for acute medical conditions or injuries.
Anchor hospital stay	The hospitalization that triggers the start of the episode of care for Models 2 and 4.
Awardee	A risk-bearing, financially responsible organization in the BPCI initiative. This entity may or may not be an episode initiator (EI).
Awardee Convener (AC)	Parent companies, health systems, or other organizations that assume financial risk under the Model for Medicare beneficiaries that initiate episodes at their respective Episode Initiating Bundled Payment Provider Organization (EI-BPPO). An AC may or may not be a Medicare provider or initiate episodes.
Baseline time period	The period of time that precedes the intervention period as a basis for comparison in difference-in-difference modeling. The baseline period spans from Q4 2011 through Q3 2012.
Beneficiary Incentive	This is one of the waivers of fraud and abuse law an Awardee may utilize. This allows Awardees to offer patients certain incentives not tied to standard provision of health care, if it supports a clinical goal.
BPCI Savings Pool	Collection of funds that consists solely of contributions from EIPs of Internal Cost Savings (ICS) and contributions from the Awardee of positive NPRA (collectively, "BPCI Savings") that are made available to distribute as Incentive Payments pursuant to Section III.C of the Awardee Agreement.
Bundle	The services provided during the episodes that are linked for payment purposes. The bundle varies based on the model and chosen episode length.
Bundle length	A pre-specified duration of time: 30, 60, or 90 days.
Care stinting	A potential unintended consequence of BPCI where services are reduced, resulting in lower quality of care outcomes.
Cherry-picking	A potential unintended consequence of BPCI where providers change their patient mix through increased admissions of less complex patients.
Clinical episode	One of the 48 episodes of the BPCI initiative related to a specific set of MS-DRGs.
Convener approach	The level at which an episode initiator is participating in the initiative. This informs whether an episode initiator is under a Facilitator Convener or Awardee Convener, or if the episode initiator is a Single Awardee.

Name	Definition
Designated Awardee Convener (DAC)	Parent companies, health systems, or other organizations that assume financial risk under the Model for Medicare beneficiaries that initiate episodes at their respective Episode Initiating Bundled Payment Provider Organization (EI-BPPO). These Awardees may or may not be Medicare providers or initiate episodes themselves. Unlike an Awardee Convener, this Awardee joined the initiative under a Facilitator Convener.
Designated Awardee (DA)	An entity that initiates episodes but, unlike a Single Awardee, joins the initiative under a Facilitator Convener (FC). The DA would have an agreement with CMS and assume financial risk for episodes initiated at its institution.
EPI Start 30, 60, 90	The first 30, 60, or 90 days of the episode of care.
Episode Initiator (EI)	Under Model 2, an EI is the participating hospital where the BPCI episode begins or a participating PGP if one of its physicians is the patient's admitting physician or surgeon for the anchor hospitalization. Under Model 3, an EI may be a participating PGP or a participating SNF, HHA, IRF, or LTCH that admits the patient within 30 days following a hospital discharge for an MS-DRG for the relevant clinical episodes (anchor hospitalization). Under Model 4, an EI is the participating hospital where the BPCI episode begins. SAs and DAs are EIs. ACs and DACs may or may not be EIs themselves and also have one or more EIs under their Awardee structure.
Episode-Integrated Provider (EIP)	A Medicare provider or supplier, including but not limited to an episode initiator, that is (1) participating in Care Redesign through a Gainsharing Arrangement that is set forth in a Participant Agreement with the Awardee (or is the Awardee itself); and (2) listed in the Gainsharing List.
Episode Initiating Bundled Payment Provider Organization (EI-BPPO)	Those individual Medicare providers that deliver care to beneficiaries. EI-BPPOs are EIs associated with an AC or DAC and initiate episodes. EI-BPPOs do not bear financial risk directly with CMS.
Episode of Care	For all three models, an episode of care is triggered by an inpatient hospitalization for one of 48 clinical groupings of MS-DRGs. For Model 2, the episode is defined as an anchor hospitalization plus post discharge services provided within 30, 60, or 90 days of discharge from the anchor stay, including all readmissions that are not explicitly excluded (certain services unrelated to the triggering hospitalization are excluded from the episode). For Model 3, the episode begins upon admission to a post-acute care setting (including home health) within 30 days of discharge from the qualifying hospitalization and includes all services provided within the 30, 60, or 90 days of this admission (again, certain services unrelated to the triggering hospitalization are excluded from the episode). For Model 4, the episode is defined as an anchor hospitalization plus post discharge services provided within 30 days of discharge from the anchor stay, including all readmissions that are not explicitly excluded (certain services unrelated to the triggering hospitalization are excluded from the episode).
Episode-specific	Specific to one of the 48 clinical episodes.
Facilitator Convener (FC)	An entity that submits a BPCI application and serves an administrative and technical assistance function on behalf of one or more Designated Awardees or Designated Awardee Conveners. A Facilitator Convener does not have an agreement with CMS, nor do they bear financial risk under the Model.

Name	Definition
Gainsharing	This is one of the waivers of fraud and abuse law an Awardee may utilize. This allows participants to develop a methodology and share any Internal Cost Savings (ICS) and/or Net Payment Reconciliation Amounts (NPRA) as applicable.
Implementation Protocol	Awardee-submitted document that contains general Awardee information, care redesign interventions, gainsharing plan/methodology if applicable, and other details regarding waiver use.
Internal Cost Savings (ICS)	For each EIP, the measurable, actual, and verifiable cost savings realized by the EIP resulting from Care Redesign undertaken by the EIP in connection with providing items and services to Model 2, 3, or 4 beneficiaries within specific episodes of care. Internal Cost Savings does not include savings realized by any individual or entity that is not an EIP.
Lemon-dropping	A potential unintended consequence of the BPCI initiative where providers change their patient mix by avoiding high cost patients.
Model 2	Retrospective acute and post-acute care episode. The episode of care includes inpatient stay in the acute care hospital and all related services during the episode. The episode ends 30, 60, or 90 days after hospital discharge.
Model 3	Retrospective post-acute care only. The episode of care is triggered by an acute care hospital stay and begins at initiation of post-acute care services. The post-acute care services must begin within 30 days of discharge from the inpatient stay and end 30, 60, or 90 days after the initiation of the episode.
Model 4	Prospective acute care hospital stay only. CMS makes a single, prospectively determined bundled payment to the hospital that encompasses all services furnished during the inpatient stay by the hospital, physicians, and other practitioners. Related readmissions for 30 days after hospital discharge are included in the bundled payment amount.
Net Payment Reconciliation Amount (NPRA)	The Target Price minus the total dollar amount of Medicare fee-for-service expenditures for items and services (collectively referred to as "Aggregate FFS Payment" or "AFP") furnished by the Awardee, the episode initiator, EIPs, gainsharers, or third party providers during an episode of care. Not applicable for Model 4.
Participant	An ACH, PGP, SNF, LTCH, HHA, or IRF that is actually initiating episodes under the BPCI initiative *or* an Awardee that is not an episode initiator.
Phase 1	An initial period before a participant is "at financial risk". During this time period, " CMS and the potential participant prepare for implementation of the BPCI initiative and assumption of financial risk.
Phase 2	The phase of the initiative when a participant is considered "at risk" and is allowed to begin initiating some or all of its clinical episodes and bearing financial risk, as applicable.
Post-acute care (PAC)	All care services received by the beneficiary after discharge from the qualifying hospital stay. Includes care from the PAC provider (SNF, IRF, LTCH, HHA) as well as any potential inpatient hospitalizations (readmissions), professional services, and/or outpatient care.
Post-acute care qualifying admission	An admission to a participating (or comparison group) PAC provider within 30 days of discharge from the qualifying hospitalization upon which a Model 3 episode begins.
Post-bundle care	The care within an episode of care that is not covered under the BPCI initiative.

Name	Definition
Post-discharge period (PDP)	Period of time starting on the day of the anchor hospitalization (Model 2 and 4), qualifying hospitalization (Model 3), or transfer hospital discharge.
Qualifying hospital stay	The acute care hospitalization that precedes the start of a Model 3 episode of care. All Model 3 episodes of care start within 30 days of discharge from this acute care qualifying hospitalization.
Risk adjustment	When sufficient sample size was available, we risk adjusted our outcomes. Without adequate risk adjustment, providers with a sicker or more service intensive patient mix would have worse outcomes and providers with healthier patients would have better outcomes even if nothing else differed. All measures were risk adjusted for service mix; demographic factors, prior health conditions based on Hierarchical Chronic Conditions (HCC) indicators, measures of prior care use, and provider characteristics.
Salesforce	A database where CMS stores secure, frequently-updated data about BPCI initiative participants and episodes, from which Lewin can process various reports at any time.
Single Awardee (SA)	An individual Medicare provider that assumes financial risk for episodes initiated at their institution. SAs are also episode initiators.
Three-day SNF Waiver	This is one of the Medicare payment policy waivers an Awardee may utilize. This allows Model 2 participants to waive the three-day hospital stay requirement for Part A skilled nursing facility coverage.
Within-Bundle Care	Model 2: Any care provided during the anchor hospital stay and the first 30, 60, or 90 days of the post-discharge period, depending on the bundle length. Model 3: any care provided during the 30, 60, or 90 days from the BPCI initiative participating PAC provider admission, depending on the bundle length.

Exhibit A.2: Acronyms

Acronym	Definition
AC	Awardee Convener
ACE	Medicare Acute Care Episode ACE Demonstration
ACH	Acute Care Hospital
ACO	Accountable Care Organization
AHRF	Area Health Resource File
APC	Ambulatory Payment Classification
BPCI	Bundled Payments for Care Improvement
CBO	Congressional Budget Office
CBSA	Core-Based Statistical Area
CCN	CMS Certification Number
CCW	Chronic Conditions Data Warehouse
CMG	Case-mix group
CMS	Centers for Medicare & Medicaid Services
COPD	Chronic Obstructive Pulmonary Disease
DAC	Designated Awardee Convener
DiD	Difference in Difference
ED	Emergency Department
EDB	Enrollment Database
EI	Episode Initiator
EI-BPPO	Episode Initiating Bundled Payment Provider Organization
EIP	Episode-Integrated Provider
ESRD	End-Stage Renal Disease
FC	Facilitator Convener
FFS	Fee-for-service
HCC	Hierarchical Condition Category
HCPCS	Healthcare Common Procedure Coding System
HH	Home Health
HHA	Home Health Agency
HIE	Health Information Exchange
HIT	Health Information Technology
HRR	Hospital Referral Region
ICS	Internal Cost Saving
IDR	Integrated Data Repository
IP	Implementation Protocol
IPPS	Inpatient Prospective Payment System
IQR	Inpatient Quality Reporting
IRF	Inpatient Rehabilitation Facility

Acronym	Definition
IRF-PAI	Inpatient Rehabilitation Facility Patient Assessment
LOS	Length of stay
LTC	Long Term Care
LTCH	Long Term Care Hospital
MBSF	Medicare Beneficiary Summary File
MCC	Major Complication or Comorbidity
MDM	Master Data Management
MDS	Minimum Data Set
MS-DRG	Medicare Severity-adjusted Diagnosis Related Group
NHC	Nursing Home Compare
NOA	Notice of Admission
NPRA	Net Payment Reconciliation Amount
NQF	National Quality Forum
OASIS	Outcome and Assessment Information Set
OIP	Other Inpatient
ONC	Office of the National Coordinator
PAC	Post-acute Care
PACE	Program of All-Inclusive Care for the Elderly
PBP	Post-Bundle Period
PCP	Primary Care Physician
PDP	Post-Discharge Period
PECOS	Provider Enrollment and Chain/Ownership System
PGP	Physician Group Practice
PM/RC	Program Monitoring, Rapid Cycle
POS	Provider of Service
PPDP	Post-PAC Discharge Period
RUG	Resource Use Group
SA	Single Awardee
SAS	Statistical Analysis Software
SFTP	Secure File Transfer Protocol
SNF	Skilled Nursing Facility
TEP	Technical Expert Panel

Appendix B: BPCI Clinical Episodes and Medicare Severity Diagnosis Related Groups (MS-DRGs)

Episode	MS-DRGs that trigger the clinical episode														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Acute myocardial infarction	280	281	282												
AICD generator or lead	245	265													
Amputation	239	240	241	255	256	257	474	475	476	616	617	618			
Atherosclerosis	302	303													
Back & neck except spinal fusion	490	491	518	519	520										
Coronary artery bypass graft	231	232	233	234	235	236									
Cardiac arrhythmia	308	309	310												
Cardiac defibrillator	222	223	224	225	226	227									
Cardiac valve	216	217	218	219	220	221	266	267							
Cellulitis	602	603													
Cervical spinal fusion	471	472	473												
Chest pain	313														
Combined anterior posterior spinal fusion	453	454	455												
Complex non-cervical spinal fusion	456	457	458												
Congestive heart failure	291	292	293												
Chronic obstructive pulmonary disease, bronchitis, asthma	190	191	192	202	203										
Diabetes	637	638	639												
Double joint replacement of the lower extremity	461	462													
Esophagitis, gastroenteritis and other digestive disorders	391	392													
Fractures of the femur and hip or pelvis	533	534	535	536											
Gastrointestinal hemorrhage	377	378	379												
Gastrointestinal obstruction	388	389	390												
Hip & femur procedures except major joint	480	481	482												

Episode	MS-DRGs that trigger the clinical episode														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lower extremity & humerus procedure except hip, foot, femur	492	493	494												
Major bowel procedure	329	330	331												
Major cardiovascular procedure	237	238	268	269	270	271	272								
Major joint replacement of the lower extremity	469	470													
Major joint replacement of the upper extremity	483	484													
Medical non-infectious orthopedic	537	538	551	552	553	554	555	556	557	558	559	560	561	562	563
Medical peripheral vascular disorders	299	300	301												
Nutritional and metabolic disorders	640	641													
Other knee procedures	485	486	487	488	489										
Other respiratory	186	187	188	189	204	205	206	207	208						
Other vascular surgery	252	253	254												
Pacemaker	242	243	244												
Pacemaker device replacement or revision	258	259	260	261	262										
Percutaneous coronary intervention	246	247	248	249	250	251	273	274							
Red blood cell disorders	811	812													
Removal of orthopedic devices	495	496	497	498	499										
Renal failure	682	683	684												
Revision of the hip or knee	466	467	468												
Sepsis	870	871	872												
Simple pneumonia and respiratory infections	177	178	179	193	194	195									
Spinal fusion (non-cervical)	459	460													
Stroke	61	62	63	64	65	66									
Syncope & collapse	312														
Transient ischemia	69														
Urinary tract infection	689	690													

Appendix C: Count of Episode Initiators and Episodes by Model, Episode Initiator Type, and Clinical Episode, Q4 2013 – Q3 2016

Table C.1: Count of Model 2 Episode Initiators during BPCI Intervention Period by Episode Initiator Type and Clinical Episode

Clinical Episode	Episode Initiators by Participant Type (N=694)		
	ACH (N=422)	PGP (N=272)	% of EIs
Major joint replacement of the lower extremity	320	140	66.3%
Congestive heart failure	183	79	37.8%
Simple pneumonia and respiratory infections	145	97	34.9%
Chronic obstructive pulmonary disease, bronchitis, asthma	137	98	33.9%
Sepsis	127	93	31.7%
Hip & femur procedures except major joint	108	86	28.0%
Cellulitis	85	89	25.1%
Acute myocardial infarction	97	75	24.8%
Urinary tract infection	91	78	24.4%
Medical non-infectious orthopedic	100	69	24.4%
Renal failure	80	73	22.0%
Other respiratory	77	72	21.5%
Stroke	84	55	20.0%
Cardiac arrhythmia	76	63	20.0%
Nutritional and metabolic disorders	63	70	19.2%
Esophagitis, gastroenteritis and other digestive disorders	63	69	19.0%
Fractures of the femur and hip or pelvis	60	67	18.3%
Gastrointestinal hemorrhage	63	61	17.9%
Gastrointestinal obstruction	54	60	16.4%
Percutaneous coronary intervention	53	59	16.1%
Syncope & collapse	40	66	15.3%
Diabetes	48	56	15.0%
Red blood cell disorders	42	60	14.7%
Lower extremity and humerus procedure except hip, foot, femur	52	48	14.4%
Medical peripheral vascular disorders	42	58	14.4%
Spinal fusion (non-cervical)	55	38	13.4%
Chest pain	35	56	13.1%
Transient ischemia	35	54	12.8%
Major joint replacement of the upper extremity	44	40	12.1%
Major bowel procedure	48	33	11.7%
Atherosclerosis	33	46	11.4%
Revision of the hip or knee	50	28	11.2%

Clinical Episode	Episode Initiators by Participant Type (N=694)		
	ACH (N=422)	PGP (N=272)	% of EIs
Coronary artery bypass graft	51	22	10.5%
Other vascular surgery	43	29	10.4%
Amputation	26	45	10.2%
Cervical spinal fusion	46	24	10.1%
Pacemaker	27	40	9.7%
Cardiac valve	38	19	8.2%
Major cardiovascular procedure	35	21	8.1%
Double joint replacement of the lower extremity	35	21	8.1%
AICD generator or lead	6	50	8.1%
Removal of orthopedic devices	34	20	7.8%
Other knee procedures	18	29	6.8%
Cardiac defibrillator	19	25	6.3%
Combined anterior posterior spinal fusion	18	21	5.6%
Back & neck except spinal fusion	24	14	5.5%
Pacemaker device replacement or revision	16	21	5.3%
Complex non-cervical spinal fusion	19	14	4.8%

Table C.2: Count of Model 2 Patient Episodes during BPCI Intervention Period by Episode Initiator Type and Clinical Episode

Clinical Episode	Patient episodes (N=731,734)		
	ACH (N=353,178)	PGP (N=378,556)	%
Major joint replacement of the lower extremity	120,237	80,764	27.5%
Major joint replacement of the lower extremity (non-fracture)	106,481	70,296	24.2%
Congestive heart failure	33,648	25,023	8.0%
Sepsis	28,846	50,043	10.8%
Simple pneumonia and respiratory infections	24,148	27,561	7.1%
Chronic obstructive pulmonary disease, bronchitis, asthma	19,311	21,099	5.5%
Major joint replacement of the lower extremity (fracture)	13,756	10,468	3.3%
Stroke	12,446	10,346	3.1%
Urinary tract infection	8,796	14,702	3.2%
Renal failure	8,066	15,078	3.2%
Hip & femur procedures except major joint	7,762	11,001	2.6%
Medical non-infectious orthopedic	7,563	8,829	2.2%
Cardiac arrhythmia	6,497	8,935	2.1%
Acute myocardial infarction	6,088	9,259	2.1%
Cellulitis	5,835	9,126	2.0%

Clinical Episode	Patient episodes (N=731,734)		
	ACH (N=353,178)	PGP (N=378,556)	%
Percutaneous coronary intervention	5,669	6,444	1.7%
Cardiac valve	5,437	433	0.8%
Other respiratory	5,373	12,356	2.4%
Gastrointestinal hemorrhage	4,751	7,737	1.7%
Coronary artery bypass graft	4,642	461	0.7%
Esophagitis, gastroenteritis and other digestive disorders	4,542	10,399	2.0%
Spinal fusion (non-cervical)	3,897	2,906	0.9%
Major bowel procedure	3,285	824	0.6%
Nutritional and metabolic disorders	2,987	7,822	1.5%
Coronary artery bypass graft (emergent)	2,356	372	0.4%
Coronary artery bypass graft (non emergent)	2,286	89	0.3%
Gastrointestinal obstruction	1,875	4,069	0.8%
Cervical spinal fusion	1,735	640	0.3%
Other vascular surgery	1,700	868	0.4%
Major joint replacement of the upper extremity	1,664	3,726	0.7%
Diabetes	1,612	3,958	0.8%
Syncope & collapse	1,517	3,754	0.7%
Revision of the hip or knee	1,483	1,214	0.4%
Fractures of the femur and hip or pelvis	1,237	2,392	0.5%
Lower extremity and humerus procedure except hip, foot, femur	1,221	969	0.3%
Transient ischemia	1,182	2,274	0.5%
Medical peripheral vascular disorders	1,157	1,664	0.4%
Pacemaker	1,133	1,606	0.4%
Chest pain	1,092	2,450	0.5%
Red blood cell disorders	1,090	3,791	0.7%
Major cardiovascular procedure	1,040	506	0.2%
Amputation	533	1,324	0.3%
Double joint replacement of the lower extremity	410	613	0.1%
Atherosclerosis	379	657	0.1%
Back & neck except spinal fusion	364	146	0.1%
Cardiac defibrillator	321	300	0.1%
Combined anterior posterior spinal fusion	186	236	0.1%
Removal of orthopedic devices	182	56	0.0%
Complex non-cervical spinal fusion	98	33	0.0%
Other knee procedures	84	82	0.0%
Pacemaker device replacement or revision	51	64	0.0%
AICD generator or lead	6	16	0.0%

Table C.3: Count of Model 3 Episode Initiators during BPCI Intervention Period by Episode Initiator Type and Clinical Episode

Clinical Episode	Episode Initiators by Participant Type (N=1,143)					
	SNF (N=873)	HHA (N=116)	IRF (N=9)	LTCH (N=1)	PGP (N=144)	% of EIs
Major joint replacement of the lower extremity	467	49	1	1	30	47.9%
Simple pneumonia and respiratory infections	399	47	1	1	13	40.3%
Congestive heart failure	344	60	1	1	7	36.1%
Chronic obstructive pulmonary disease, bronchitis, asthma	332	43	0	1	7	33.5%
Urinary tract infection	300	32	0	0	11	30.0%
Sepsis	306	11	1	1	6	28.4%
Hip & femur procedures except major joint	296	16	1	1	10	28.3%
Stroke	286	24	3	0	9	28.2%
Acute myocardial infarction	264	29	0	0	9	26.4%
Other respiratory	264	25	0	1	10	26.2%
Medical non-infectious orthopedic	272	8	0	0	5	24.9%
Cardiac arrhythmia	240	23	0	0	11	24.0%
Fractures of the femur and hip or pelvis	259	12	1	0	2	24.0%
Cellulitis	243	9	0	0	8	22.7%
Nutritional and metabolic disorders	240	11	0	0	9	22.7%
Major bowel procedure	246	8	0	0	4	22.6%
Gastrointestinal hemorrhage	242	6	0	0	5	22.1%
Esophagitis, gastroenteritis and other digestive disorders	237	4	0	0	6	21.6%
Renal failure	222	10	0	0	13	21.4%
Lower extremity and humerus procedure except hip, foot, femur	222	8	0	0	9	20.9%
Diabetes	219	12	0	0	8	20.9%
Syncope & collapse	224	3	0	0	11	20.8%
Revision of the hip or knee	215	18	1	0	2	20.6%
Transient ischemia	222	6	0	0	5	20.4%
Gastrointestinal obstruction	221	3	0	0	7	20.2%
Medical peripheral vascular disorders	206	20	0	0	3	20.0%
Other vascular surgery	197	23	0	0	8	19.9%
Pacemaker	209	4	0	0	6	19.2%
Coronary artery bypass graft	176	37	0	0	5	19.1%
Cardiac valve	185	22	0	0	5	18.5%
Major joint replacement of the upper extremity	194	9	1	0	3	18.1%
Percutaneous coronary intervention	177	23	0	0	5	17.9%
Red blood cell disorders	184	6	0	0	8	17.3%
Pacemaker device replacement or revision	150	1	0	0	44	17.1%
Chest pain	170	17	0	0	5	16.8%

Clinical Episode	Episode Initiators by Participant Type (N=1,143)					
	SNF (N=873)	HHA (N=116)	IRF (N=9)	LTCH (N=1)	PGP (N=144)	% of EIs
Other knee procedures	185	3	0	0	1	16.5%
Spinal fusion (non-cervical)	147	24	1	0	3	15.3%
Major cardiovascular procedure	145	19	0	0	2	14.5%
Double joint replacement of the lower extremity	133	16	3	0	11	14.3%
Removal of orthopedic devices	158	2	0	0	3	14.3%
Back & neck except spinal fusion	150	8	1	0	0	13.9%
Atherosclerosis	150	2	0	0	4	13.6%
Amputation	147	3	0	0	2	13.3%
AICD generator or lead	135	3	0	0	14	13.3%
Cardiac defibrillator	125	19	0	0	1	12.7%
Complex non-cervical spinal fusion	122	16	0	0	0	12.1%
Cervical spinal fusion	96	20	1	0	3	10.5%
Combined anterior posterior spinal fusion	76	2	0	0	2	7.0%

Table C.4: Count of Model 3 Patient Episodes during BPCI Intervention Period by Episode Initiator Type and Clinical Episode

Clinical Episode	Count of patient episodes by EI type (N=84,041)					
	SNF (N=49,468)	HHA (N=14,909)	IRF (N=853)	LTCH (N=150)	PGP (N=18,661)	%
Major joint replacement of the lower extremity	8,401	3,316	120	2	6,567	21.9%
Major joint replacement of the lower extremity (non-fracture)	6,450	3,069	74	0	5574	18.0%
Sepsis	4,975	372	33	61	1,843	8.7%
Congestive heart failure	3,564	4,406	63	19	166	9.8%
Simple pneumonia and respiratory infections	3,452	1,355	42	16	1,013	7.0%
Hip & femur procedures except major joint	3,308	235	91	2	891	5.4%
Medical non-infectious orthopedic	3,063	66	0	0	47	3.8%
Urinary tract infection	2,441	467	0	0	600	4.2%
Stroke	2,070	474	326	0	845	4.4%
Major joint replacement of the lower extremity (fracture)	1,951	247	46	2	993	3.9%
Renal failure	1,854	124	0	0	404	2.8%
Chronic obstructive pulmonary disease, bronchitis, asthma	1,537	876	0	13	907	4.0%
Other respiratory	1,513	409	0	37	416	2.8%
Cardiac arrhythmia	933	238	0	0	562	2.1%

Clinical Episode	Count of patient episodes by EI type (N=84,041)					
	SNF (N=49,468)	HHA (N=14,909)	IRF (N=853)	LTCH (N=150)	PGP (N=18,661)	%
Cellulitis	932	34	0	0	505	1.8%
Fractures of the femur and hip or pelvis	847	37	21	0	26	1.1%
Nutritional and metabolic disorders	830	61	0	0	429	1.6%
Major bowel procedure	773	45	0	0	84	1.1%
Gastrointestinal hemorrhage	772	32	0	0	170	1.2%
Acute myocardial infarction	770	337	0	0	403	1.8%
Esophagitis, gastroenteritis and other digestive disorders	734	19	0	0	535	1.5%
Lower extremity and humerus procedure except hip, foot, femur	563	34	0	0	362	1.1%
Cardiac valve	524	138	0	0	9	0.8%
Revision of the hip or knee	522	301	17	0	149	1.2%
Syncope & collapse	493	16	0	0	285	0.9%
Other vascular surgery	434	155	0	0	191	0.9%
Medical peripheral vascular disorders	419	76	0	0	21	0.6%
Spinal fusion (non-cervical)	404	390	38	0	106	1.1%
Diabetes	350	48	0	0	449	1.0%
Pacemaker	340	10	0	0	84	0.5%
Percutaneous coronary intervention	315	105	0	0	23	0.5%
Coronary artery bypass graft	297	304	0	0	47	0.8%
Red blood cell disorders	295	15	0	0	111	0.5%
Gastrointestinal obstruction	243	2	0	0	132	0.4%
Major joint replacement of the upper extremity	239	123	1	0	61	0.5%
Transient ischemia	210	11	0	0	56	0.3%
Amputation	164	4	0	0	4	0.2%
Back & neck except spinal fusion	130	21	23	0	0	0.2%
Major cardiovascular procedure	103	48	0	0	13	0.2%
Chest pain	97	30	0	0	55	0.2%
Double joint replacement of the lower extremity	90	4	49	0	68	0.3%
Other knee procedures	89	5	0	0	0	0.1%
Cervical spinal fusion	79	115	29	0	1	0.3%
Complex non-cervical spinal fusion	57	23	0	0	0	0.1%
Cardiac defibrillator	56	23	0	0	0	0.1%
Combined anterior posterior spinal fusion	56	4	0	0	0	0.1%
Removal of orthopedic devices	55	0	0	0	1	0.1%
Pacemaker device replacement or revision	36	0	0	0	13	0.1%

Clinical Episode	Count of patient episodes by EI type (N=84,041)					
	SNF (N=49,468)	HHA (N=14,909)	IRF (N=853)	LTCH (N=150)	PGP (N=18,661)	%
Atherosclerosis	35	1	0	0	4	0.0%
AICD generator or lead	4	0	0	0	3	0.0%

Table C.5: Count of Model 4 Episode Initiators during BPCI Intervention Period by Episode Initiator Type and Clinical Episode

Clinical Episode	Episode Initiators (N=23)	
	N	%
Major joint replacement of the lower extremity	15	65.2%
Coronary artery bypass graft	9	39.1%
Double joint replacement of the lower extremity	9	39.1%
Cardiac defibrillator	7	30.4%
Pacemaker	7	30.4%
Percutaneous coronary intervention	7	30.4%
Cardiac valve	6	26.1%
Pacemaker device replacement or revision	6	26.1%
Back & neck except spinal fusion	4	17.4%
Cervical spinal fusion	4	17.4%
Spinal fusion (non-cervical)	4	17.4%
Revision of the hip or knee	3	13.0%
Combined anterior posterior spinal fusion	2	8.7%
Complex non-cervical spinal fusion	2	8.7%
Congestive heart failure	2	8.7%
Other knee procedures	2	8.7%
Sepsis	2	8.7%
Acute myocardial infarction	1	4.3%
AICD generator or lead	1	4.3%

Table C.6: Count of Model 4 Patient Episodes during BPCI Intervention Period by Clinical Episode

Clinical Episode	Patient episodes (N= 12,369)	
	N	%
Major joint replacement of the lower extremity	5,448	44.0%
Coronary artery bypass graft	1,228	9.9%
Spinal fusion (non-cervical)	1,019	8.2%
Percutaneous coronary intervention	920	7.4%
Sepsis	832	6.7%
Cardiac valve	801	6.5%
Congestive heart failure	420	3.4%
Cervical spinal fusion	412	3.3%
Pacemaker	381	3.1%
Revision of the hip or knee	253	2.0%
Back & neck except spinal fusion	214	1.7%
Complex non-cervical spinal fusion	138	1.1%
Acute myocardial infarction	83	0.7%
Combined anterior posterior spinal fusion	76	0.6%
Cardiac defibrillator	61	0.5%
Double joint replacement of the lower extremity	37	0.3%
Pacemaker device replacement or revision	21	0.2%
Other knee procedures	20	0.2%
AICD generator or lead	5	0.0%

Appendix D: Construction of Comparison Providers and Episodes

I. Overview

The quantitative analysis uses a differences-in-difference (DiD) design to estimate the differential change in payment, quality, and utilization outcomes between the baseline and an intervention period for beneficiaries who received services from BPCI providers relative to beneficiaries who received services from a comparison group of non-BPCI providers. Comparison groups were constructed for 46 Model, provider type and clinical episodes from the universe of Medicare providers that had not entered Phase 2 of BPCI. Comparison providers and episodes were selected in four steps, described in detail below.

II. Steps to Selecting Comparison Providers and Episodes

Step 1: Exclude Ineligible Non-participating Providers

The exclusions were applied for each Model, EI type, and clinical episode separately. Providers were excluded if they met any of the following criteria:

- Would be ineligible to participate in BPCI (e.g., in Model 2, ACHs that were not paid under Medicare's inpatient prospective payment system).
- Were owned by a BPCI-participating organization.
- Participated in any of the BPCI Models (Model 1 to Model 4).
- Were missing key matching characteristics (e.g., ownership status (i.e., government, non-profit, for-profit) or location (i.e., rural/urban)).
- Were located in markets where BPCI participants have over half of the discharges associated with any of the 48 BPCI clinical episodes. This exclusion avoids including providers that may be exposed to "spillover effects" of BPCI in those locations, which could cause changes in utilization for other local providers that may confound the results. Such changes include the following: (i) non-BPCI beneficiaries receiving some care from BPCI participants, (ii) comparison providers adopting practices similar to BPCI participants, or (iii) BPCI affecting referral patterns in the market.
- Had fewer than five clinically relevant discharges during both calendar years 2011 and 2012. These providers are excluded in order to remove providers that did not have meaningful utilization in the episode domain. This exclusion applies to participants as well as non-participants.

Step 2: Use Matching Algorithms to Select Close Matches

For each strata, we assess the relative performance of Propensity Score Matching (PSM), Mahalanobis Distance Matching (MDM), or Coarsened Exact Matching (CEM) methods, and selected the method that performed best, assessed using criteria as described below. PSM tended to work well for Model, provider type, and clinical episode combinations meeting the criteria of 20 EIs and 1,000 cases. However, for one of the combinations with a smaller number of participants, the MDM method performed best and was used (more detail on this instance is provided below).

A *propensity score* is defined as the predictive probability of receiving the "treatment" (in this case, BPCI participation), conditional on a set of characteristics. This probability was estimated using a logistic regression model that included key factors thought to influence both the participation decision and performance in BPCI. These factors included market characteristics (e.g., population size and primary care physician to population ratios), provider characteristics (e.g., ownership status and number of beds), and performance- and practice pattern-related factors (e.g., historical Part A Medicare payments and use of PAC services). The variables considered for matching by providers type for Model 2 and Model 3 are displayed in Exhibit D.1. In some cases, transformations of the variables or a smaller set of variables were used to improve the matching diagnostics (as discussed below).

Exhibit D.1: Key Variables used for Matching Provider Type for Model 2 and Model 3

Variable	Model 2: ACH	Model 3: HHA	Model 3: SNF
Ownership - Non-Profit, Government, For-Profit	X	X	X
Urban/Rural Location	X	X	X
Bed Count	X		X
Number of Nurses Employed by an HHA		X	
Chain Indicator	X		X
SNF in Hospital			X
Medicare Days as a Percent of Total Inpatient Days	X		
Resident-Bed Ratio	X		
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)			X
Disproportionate Share Percent	X		
Teaching Status	X		
Population Size of Market Area	X	X	X
Median Household Income	X		X
Medicare Advantage Penetration	X		X
Primary Care Providers per 10,000 in Market	X		
SNF Beds per 10,000 in Market	X		X
Inpatient Rehabilitation Facility in Market	X		X
Provider Market Share of the 48 potential BPCI clinical episodes	X		X
Herfindahl Index of Hospital Market Shares	X		X
Herfindahl Index of SNF Market Shares			X
Percentage of total discharges in the 48 BPCI clinical episodes in 2011	X	X	X
Number of discharges for clinical episode in 2011	X	X	X
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011			X
Number of HHA days per patient within 90 days after an ACH discharge by clinical episode in 2011		X	X
Percent of patients in 2011 that went home with no post-acute care by clinical episode	X		
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	X		
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	X		

Variable	Model 2: ACH	Model 3: HHA	Model 3: SNF
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	X		
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode	X		
Emergency department use by clinical episode in 2011	X	X	X
Change in emergency department use by clinical episode from 2011 to 2012	X	X	X
Unplanned readmission rate by clinical episode in 2011	X	X	X
Change in unplanned readmission rate by clinical episode from 2011 to 2012	X	X	X
All-cause mortality rate in 2011 by clinical episode	X	X	X
Change in all-cause mortality rate by clinical episode from 2011 to 2012	X	X	X
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	X	X	X
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	X	X	X

Using the coefficients from the logistic regression model, we constructed a propensity score as the predicted probability of participating in BPCI. Each BPCI participant was matched with up to 15 comparison providers with a propensity score absolute difference below a defined caliper. In cases where more than 15 providers fell within the caliper, the 15 closest providers were matched to the BPCI participant. A caliper acts as a constraint on the "distance" between BPCI and potential comparison providers based on the difference in absolute value in their estimated propensity scores. Any comparison providers outside of the "caliper" of a BPCI provider would not be matched to that BPCI provider. BPCI providers with no potential matches inside the caliper were excluded from the analysis. These BPCI providers typically had outliers measured in several of the key factors used for matching, such as the number of discharges for the episode or the share of BPCI episodes in the market. Calipers were chosen based on the standard deviation of the estimated log-odds propensity score. Multiple calipers were tested for each strata to identify the specification that generated the most similar comparison group across all of the attributes considered important for matching. Finally, a comparison provider was allowed to be used as a match for more than one participant.

The key diagnostic used to determine similarity between BPCI and comparison providers was the standardized difference in the mean of each of the matching variables between participants and non-participants. The standardized difference compares the differences in means in relation to the pooled standard deviation. The average standardized difference across all variables was computed to assess overall balance. The method that yields the lowest standardized difference of means across the largest number of covariates and that results in the fewest number of "large" standardized differences (i.e., greater than 0.20) is typically preferred.[1] Minimizing standardized differences of performance-related variables (90-day standardized Medicare Part A payment, unplanned readmission rates, mortality rates, and emergency department use rates) was prioritized. Standardized differences below 0.10 were targeted for these variables.

[1] Stuart, E.A. (2010). Matching methods for causal inference: A review and a look forward. S*tatistical science: a review journal of the Institute of Mathematical Statistics*, 25(1), 1.

We initially started the propensity score matching with the variables identified in Exhibit D.1 above. For certain Model, provider type, and episode combinations, the standardized differences were largely based on the previously defined threshold (either across all variables or for specific key variables) regardless of the caliper used. In these cases, we tested alternative specifications of variables used in the model in order to improve matching.

If the alternative specifications using the propensity score matching did not result in better matches, we then tried alternative matching methods including MDM and CEM.

MDM yielded a better comparison group (i.e., lower standardized differences) for Model 3 HHA CHF strata. Each BPCI provider was matched to the 15 providers in the non-participant group with which it has the lowest (i.e., nearest) Mahalanobis distance. Two separate MDM models were used to identify matches for the Model 3 CHF strata. The first MDM model excluded one BPCI HHA participant from the Mahalanobis distance matching, as this provider was not matched under any PSM specification and it was an extreme outlier in terms of the number of nurses associated with the HHA and the number of relevant cases treated by the HHA. The second MDM model included the outlier and all other participants but only the outlier and its 15 matched non-participants matches were retained. Matches from the first model were combined with the subset of matches for the outlier HHA from the second model to form the comparison group for this strata.

Appendix E shows the calipers chosen for each PSM model as well as the standardized differences of each covariate included in the matching models between BPCI providers and matched comparison providers for each clinical episode. Our ability to construct comparison groups (and the share of BPCI providers included in the analysis) varied across clinical episodes. However, for 45 out of the 46 clinical episodes, the standardized differences were less than 0.2 for the key performance measures.

Step 3: Construct Episodes for Matched Comparison Providers

The BPCI episode algorithm rules were applied to construct simulated episodes that would have been assigned to comparison facilities if they were participating in BPCI. We constructed simulated episodes from October 2010 through September 2016.

Step 4: Select Random Sample of Comparison Group Episodes

Among all episodes identified in the previous step, we drew a random sample of comparison group episodes. Each BPCI episode was randomly matched to one episode from the pool of comparison episodes in the same quarter with the same MS-DRG, originating from the comparison providers that were matched to the BPCI participant. In the case of the MJRLE clinical episode, matches were also constructed to take into account patients with fractures versus those without fractures. The matched comparison was then excluded from the pool of episodes eligible for future matching. In some cases, the comparison pool did not contain enough episodes resulting in unmatched participant episodes. Sensitivity analyses were performed to test the DiD using both the matched and unmatched episodes.

Appendix E: Comparison Group Standardized Difference Tables

Exhibit E.1.a: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 1, Major Joint Replacement of the Upper Extremity

Variable	Episode 1 (Major Joint Replacement of the Upper Extremity)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.31	0.11
Ownership - Government*	N/A	N/A
Ownership - For Profit*	-0.31	-0.11
Urban	0.47	0.00
Bed Count	0.29	0.07
Chain Indicator	-0.11	0.04
Medicare Days as a Percent of Total Inpatient Days	-0.18	0.01
Resident-Bed Ratio	0.27	0.05
Disproportionate Share Percent	-0.10	-0.01
Teaching Status	0.37	-0.04
Population Size of Market Area	0.39	-0.07
Median Household Income	0.75	0.00
Medicare Advantage Penetration	-0.16	-0.04
Primary Care Providers per 10,000 in Market	0.31	0.00
SNF Beds per 10,000 in Market	-0.14	-0.01
Inpatient Rehabilitation Facility in Market	0.48	-0.09
Provider Market Share of the 48 potential BPCI episodes	-0.47	0.03
Herfindahl Index of Hospital Market Shares	-0.55	0.04
Percentage of total discharges in the 48 clinical episodes in 2011	-0.13	-0.07
Number of discharges for clinical episode in 2011	0.15	0.05
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.27	0.03
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	-0.29	-0.04
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.55	-0.06
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.20	0.02
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	-0.07	0.02
Unplanned readmission rate by clinical episode in 2011	-0.21	0.04
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.05	-0.10
All-cause mortality rate in 2011 by clinical episode	-0.20	0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.07	0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.52	-0.04
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.37	-0.03

Variable	Episode 1 (Major Joint Replacement of the Upper Extremity)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Emergency Room rate by clinical episode in 2011	0.01	0.02
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.01	0.06

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.84 and the standard deviation was 1.45.
N/A– not available as there are no participants with these characteristics.

Exhibit E.1.b: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 4, Urinary Tract Infection

Variable	Episode 4 (Urinary Tract Infection)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.09	-0.04
Ownership - Government	-0.62	0.00
Ownership - For Profit*	0.41	0.04
Urban	0.96	0.04
Bed Count	0.48	0.03
Chain Indicator	-0.16	-0.02
Medicare Days as a Percent of Total Inpatient Days	-0.34	0.01
Resident-Bed Ratio	0.05	-0.06
Disproportionate Share Percent	-0.01	-0.04
Teaching Status	0.29	-0.03
Population Size of Market Area	0.41	-0.01
Median Household Income	0.73	-0.02
Medicare Advantage Penetration	0.31	0.00
Primary Care Providers per 10,000 in Market	0.45	0.02
SNF Beds per 10,000 in Market	-0.56	0.05
Inpatient Rehabilitation Facility in Market	0.50	0.01
Provider Market Share of the 48 potential BPCI episodes	-0.51	-0.05
Herfindahl Index of Hospital Market Shares	-0.68	-0.05
Percentage of total discharges in the 48 clinical episodes in 2011	-0.23	0.01
Number of discharges for clinical episode in 2011	0.63	0.02
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.38	-0.03
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.37	-0.05
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.12	0.06
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.09	-0.03
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.19	-0.01
Unplanned readmission rate by clinical episode in 2011	0.04	0.02

Variable	Episode 4 (Urinary Tract Infection)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.11	0.00
All-cause mortality rate by clinical episode in 2011	-0.07	0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.08	-0.06
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.45	0.01
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.18	-0.02
Emergency Room rate by clinical episode in 2011	-0.30	-0.08
Change in Emergency room rate by clinical episode from 2011 to 2012	0.01	0.04

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.42 and the standard deviation was 2.13.

Exhibit E.1.c: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 5, Stroke

Variable	Episode 5 (Stroke)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.06	0.03
Ownership - Government	-0.38	-0.04
Ownership - For Profit*	0.31	0.00
Urban	0.96	0.05
Bed Count	0.79	-0.04
Chain Indicator	-0.06	-0.03
Medicare Days as a Percent of Total Inpatient Days	-0.49	-0.01
Resident-Bed Ratio	0.49	-0.04
Disproportionate Share Percent	0.08	-0.09
Teaching Status	0.53	-0.04
Population Size of Market Area	0.53	-0.07
Median Household Income	0.69	0.03
Medicare Advantage Penetration	0.20	-0.01
Primary Care Providers per 10,000 in Market	0.42	-0.01
SNF Beds per 10,000 in Market	-0.47	0.02
Inpatient Rehabilitation Facility in Market	0.58	-0.01
Provider Market Share of the 48 potential BPCI episodes	-0.57	0.00
Herfindahl Index of Hospital Market Shares	-0.82	0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.54	0.03
Number of discharges for clinical episode in 2011	0.84	-0.04
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.30	0.03
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.50	0.02
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	-0.35	-0.02

Variable	Episode 5 (Stroke)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.08	0.05
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.18	-0.06
Unplanned readmission rate by clinical episode in 2011	0.13	-0.07
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.14	0.06
All-cause mortality rate in 2011 by clinical episode	-0.12	0.02
Change in all-cause mortality rate by clinical episode from 2011 to 2012*	0.01	0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.49	0.00
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.09	0.00
Emergency Room rate by clinical episode in 2011	-0.20	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.09	-0.01

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.55 and the standard deviation was 2.27.

Exhibit E.1.d: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 6, Chronic Obstructive Pulmonary Disease, Bronchitis, Asthma

Variable	Episode 6 (Chronic Obstructive Pulmonary Disease, Bronchitis, Asthma)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.25	0.00
Ownership - Government	-0.56	-0.05
Ownership - For Profit*	0.21	0.02
Urban	0.81	0.04
Bed Count	0.55	-0.09
Chain Indicator	-0.04	0.01
Medicare Days as a Percent of Total Inpatient Days	-0.33	0.01
Resident-Bed Ratio	0.27	-0.04
Disproportionate Share Percent	-0.04	0.02
Teaching Status	0.41	-0.07
Population Size of Market Area	0.42	0.00
Median Household Income	0.71	0.04
Medicare Advantage Penetration	0.17	0.06
Primary Care Providers per 10,000 in Market	0.46	0.04
SNF Beds per 10,000 in Market	-0.43	-0.01
Inpatient Rehabilitation Facility in Market	0.45	0.01
Provider Market Share of the 48 potential BPCI episodes	-0.37	-0.04
Herfindahl Index of Hospital Market Shares	-0.55	-0.05

Variable	Episode 6 (Chronic Obstructive Pulmonary Disease, Bronchitis, Asthma)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Percentage of total discharges in the 48 clinical episodes in 2011	-0.34	-0.02
Number of discharges for clinical episode in 2011	0.52	-0.08
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.57	-0.06
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.39	-0.02
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.24	0.04
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.13	0.03
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.40	0.03
Unplanned readmission rate by clinical episode in 2011	0.33	0.05
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.03	-0.08
All-cause mortality rate in 2011 by clinical episode	0.04	-0.02
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.00	-0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.60	0.03
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.13	-0.03
Emergency Room rate by clinical episode in 2011	-0.26	-0.01
Change in Emergency room rate by clinical episode from 2011 to 2012	0.04	0.02

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.53 and the standard deviation was 1.69.

Exhibit E.1.e: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 7, Coronary Artery Bypass Graft

Variable	Episode 7 (Coronary Artery Bypass Graft)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.29	0.04
Ownership - Government	-0.41	-0.09
Ownership - For Profit*	0.04	0.03
Urban	0.31	-0.07
Bed Count	0.47	-0.05
Chain Indicator	-0.06	0.08
Medicare Days as a Percent of Total Inpatient Days	-0.37	-0.04
Resident-Bed Ratio	0.54	-0.11
Disproportionate Share Percent	-0.03	-0.19

Variable	Episode 7 (Coronary Artery Bypass Graft)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Teaching Status	0.47	-0.03
Population Size of Market Area	0.77	-0.16
Median Household Income	0.72	-0.01
Medicare Advantage Penetration	0.11	0.04
Primary Care Providers per 10,000 in Market	0.44	0.05
SNF Beds per 10,000 in Market	0.12	0.05
Inpatient Rehabilitation Facility in Market	0.57	-0.08
Provider Market Share of the 48 potential BPCI episodes	-0.55	0.07
Herfindahl Index of Hospital Market Shares	-0.61	0.05
Percentage of total discharges in the 48 clinical episodes in 2011	-0.24	0.00
Number of discharges for clinical episode in 2011	0.21	0.15
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.53	-0.05
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.20	0.09
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.26	0.04
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.19	-0.07
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.28	-0.03
Unplanned readmission rate by clinical episode in 2011	0.23	-0.05
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.07	-0.03
All-cause mortality rate in 2011 by clinical episode	-0.20	0.07
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.08	0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.23	-0.04
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.01	-0.08
Emergency Room rate by clinical episode in 2011	-0.31	0.11
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.01	0.03

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.31 and the standard deviation was 1.59.

Exhibit E.1.f: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 8, Major Joint Replacement of the Lower Extremity

Variable	Episode 8 (Major Joint Replacement of the Lower Extremity)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.18	-0.03
Ownership - Government	-0.39	-0.02
Ownership - For Profit*	0.14	0.05
Urban	0.67	0.02
Bed Count	0.51	-0.08
Chain Indicator	-0.07	-0.01
Medicare Days as a Percent of Total Inpatient Days	-0.12	0.01
Resident-Bed Ratio	0.27	-0.01
Disproportionate Share Percent	-0.10	0.00
Teaching Status	0.28	-0.04
Population Size of Market Area	0.30	0.03
Median Household Income	0.44	0.00
Medicare Advantage Penetration	0.06	0.02
Primary Care Providers per 10,000 in Market	0.35	0.00
SNF Beds per 10,000 in Market	-0.30	0.04
Inpatient Rehabilitation Facility in Market	0.50	0.01
Provider Market Share of the 48 potential BPCI episodes	-0.47	-0.06
Herfindahl Index of Hospital Market Shares	-0.62	-0.05
Percentage of total discharges in the 48 clinical episodes in 2011	-0.28	0.03
Number of discharges for clinical episode in 2011	0.44	-0.08
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.44	-0.02
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.06	0.04
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.18	-0.02
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.09	0.00
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode	0.11	0.00
Unplanned readmission rate by clinical episode in 2011	0.09	0.05
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.02	0.02
All-cause mortality rate in 2011 by clinical episode	-0.10	0.01
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.06	0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.09	0.00
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.01	0.00

Variable	Episode 8 (Major Joint Replacement of the Lower Extremity)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Emergency Room rate by clinical episode in 2011	-0.20	0.03
Change in Emergency room rate by clinical episode from 2011 to 2012	0.00	-0.03

* These variables were not included for this model.
** Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -2.14 and the standard deviation was 1.36.

Exhibit E.1.g: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 9, Percutaneous Coronary Intervention

Variable	Episode 9 (Percutaneous Coronary Intervention)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.20	-0.01
Ownership - Government	-0.56	0.05
Ownership - For Profit*	0.66	0.00
Urban	0.38	-0.04
Bed Count	0.16	0.08
Chain Indicator	-0.29	-0.02
Medicare Days as a Percent of Total Inpatient Days	-0.17	-0.07
Resident-Bed Ratio	0.00	0.05
Disproportionate Share Percent	-0.08	-0.03
Teaching Status	0.21	0.02
Population Size of Market Area	0.55	0.04
Median Household Income	0.51	0.00
Medicare Advantage Penetration	0.07	-0.01
Primary Care Providers per 10,000 in Market	0.16	-0.05
SNF Beds per 10,000 in Market	-0.27	0.02
Inpatient Rehabilitation Facility in Market	0.56	-0.01
Provider Market Share of the 48 potential BPCI episodes	-0.56	0.05
Herfindahl Index of Hospital Market Shares	-0.57	0.04
Percentage of total discharges in the 48 clinical episodes in 2011	-0.06	-0.03
Number of discharges for clinical episode in 2011	0.12	0.07
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.62	0.06
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.30	0.01
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.45	0.04
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.01	0.01
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.36	-0.12
Unplanned readmission rate by clinical episode in 2011	0.25	0.00

Variable	Episode 9 (Percutaneous Coronary Intervention)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.04	-0.05
All-cause mortality rate in 2011 by clinical episode	-0.01	0.07
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.14	-0.09
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.51	0.04
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.04	-0.08
Emergency Room rate by clinical episode in 2011	-0.38	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012[1]	-0.11	0.00

* These variables were not included for this model.
** Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.90 and the standard deviation was 1.75.
[1]For this episode, an additional categorical variable indicating a positive change in emergency room rate from 2011 to 2012 was included in the model.

Exhibit E.1.h: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 14, Congestive Heart Failure

Variable	Episode 14 (Congestive Heart Failure)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.36	-0.04
Ownership - Government	-0.50	-0.05
Ownership - For Profit*	0.05	0.09
Urban	0.69	0.04
Bed Count	0.60	0.02
Chain Indicator	-0.04	-0.06
Medicare Days as a Percent of Total Inpatient Days	-0.27	-0.03
Resident-Bed Ratio	0.22	0.02
Disproportionate Share Percent	-0.11	-0.01
Teaching Status	0.31	-0.01
Population Size of Market Area	0.29	0.02
Median Household Income	0.52	0.00
Medicare Advantage Penetration	0.14	0.09
Primary Care Providers per 10,000 in Market	0.36	0.00
SNF Beds per 10,000 in Market	-0.42	0.01
Inpatient Rehabilitation Facility in Market	0.28	0.01
Provider Market Share of the 48 potential BPCI episodes	-0.29	-0.05
Herfindahl Index of Hospital Market Shares	-0.45	-0.04
Percentage of total discharges in the 48 clinical episodes in 2011	-0.27	-0.05
Number of discharges for clinical episode in 2011	0.68	-0.01
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.31	-0.02

Variable	Episode 14 (Congestive Heart Failure)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.28	0.01
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.03	0.03
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.05	0.04
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.31	-0.03
Unplanned readmission rate by clinical episode in 2011	0.23	0.03
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.08	-0.01
All-cause mortality rate in 2011 by clinical episode	0.09	-0.03
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.14	0.08
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.27	0.06
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.04	-0.02
Emergency Room rate by clinical episode in 2011	-0.31	-0.01
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.10	-0.01

* These variables were not included for this model.
** Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.02 and the standard deviation was 1.43.

Exhibit E.1.i: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 15, Acute Myocardial Infarction

Variable	Episode 15 (Acute Myocardial Infarction)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.18	0.03
Ownership - Government	-0.44	0.05
Ownership - For Profit*	0.21	-0.06
Urban	0.70	0.01
Bed Count	0.52	0.10
Chain Indicator	-0.16	0.07
Medicare Days as a Percent of Total Inpatient Days	-0.28	-0.03
Resident-Bed Ratio	0.20	-0.01
Disproportionate Share Percent	-0.09	0.09
Teaching Status	0.21	-0.02
Population Size of Market Area	0.33	-0.01
Median Household Income	0.62	-0.03
Medicare Advantage Penetration	0.20	-0.04
Primary Care Providers per 10,000 in Market	0.34	-0.07
SNF Beds per 10,000 in Market	-0.39	0.05

Variable	Episode 15 (Acute Myocardial Infarction)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Inpatient Rehabilitation Facility in Market	0.41	-0.01
Provider Market Share of the 48 potential BPCI episodes	-0.42	0.04
Herfindahl Index of Hospital Market Shares	-0.52	0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.22	-0.02
Number of discharges for clinical episode in 2011	0.53	0.09
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.24	-0.01
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.05	0.02
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.06	-0.01
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.09	0.02
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.28	0.00
Unplanned readmission rate by clinical episode in 2011	0.11	0.05
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.02	-0.01
All-cause mortality rate in 2011 by clinical episode	-0.15	0.03
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.05	0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.01	0.03
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.04	-0.01
Emergency Room rate by clinical episode in 2011	-0.16	0.05
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.03	-0.02

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.43 and the standard deviation was 1.33.

Exhibit E.1.j: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 16, Cardiac Arrhythmia

Variable	Episode 16 (Cardiac Arrhythmia)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.21	-0.04
Ownership - Government	-0.44	0.02
Ownership - For Profit*	0.17	0.03
Urban	0.69	0.04
Bed Count	0.45	-0.05
Chain Indicator	-0.04	0.03
Medicare Days as a Percent of Total Inpatient Days	-0.31	0.01
Resident-Bed Ratio	0.21	-0.06
Disproportionate Share Percent	-0.01	-0.04

Variable	Episode 16 (Cardiac Arrhythmia)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Teaching Status	0.18	-0.03
Population Size of Market Area	0.45	-0.05
Median Household Income	0.62	0.01
Medicare Advantage Penetration	0.28	-0.03
Primary Care Providers per 10,000 in Market	0.34	-0.02
SNF Beds per 10,000 in Market	-0.46	-0.03
Inpatient Rehabilitation Facility in Market	0.43	0.00
Provider Market Share of the 48 potential BPCI episodes	-0.38	-0.01
Herfindahl Index of Hospital Market Shares	-0.49	0.00
Percentage of total discharges in the 48 clinical episodes in 2011	-0.18	0.04
Number of discharges for clinical episode in 2011	0.43	-0.04
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.16	0.01
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.30	0.00
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.05	0.04
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.09	-0.01
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.05	-0.05
Unplanned readmission rate by clinical episode in 2011	-0.08	0.00
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.11	0.01
All-cause mortality rate in 2011 by clinical episode	-0.08	0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.01	-0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.23	-0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.13	0.04
Emergency Room rate by clinical episode in 2011	-0.20	-0.02
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.16	0.01

* These variables were not included for this model.
** Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.84 and the standard deviation was 1.32.

Exhibit E.1.k: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 17, Cardiac Valve

Variable	Episode 17 (Cardiac Valve)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.21	0.12
Ownership - Government	-0.09	-0.09
Ownership - For Profit*	-0.22	-0.07
Urban	0.03	0.07
Bed Count	0.70	0.02
Chain Indicator	0.13	-0.02
Medicare Days as a Percent of Total Inpatient Days	-0.43	0.01
Resident-Bed Ratio	0.50	0.00
Disproportionate Share Percent	-0.02	0.03
Teaching Status	0.33	0.02
Population Size of Market Area[1]	0.90	0.42
Median Household Income	0.51	0.17
Medicare Advantage Penetration	0.22	-0.06
Primary Care Providers per 10,000 in Market	0.35	0.05
SNF Beds per 10,000 in Market	0.05	-0.07
Inpatient Rehabilitation Facility in Market	0.48	0.02
Provider Market Share of the 48 potential BPCI episodes[1]	-0.55	-0.05
Herfindahl Index of Hospital Market Shares[1]	-0.59	-0.08
Percentage of total discharges in the 48 clinical episodes in 2011	-0.23	-0.01
Number of discharges for clinical episode in 2011	0.53	-0.08
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.24	-0.04
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.09	-0.05
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.34	0.11
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.44	-0.01
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	-0.09	-0.04
Unplanned readmission rate by clinical episode in 2011	0.27	0.00
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.04	0.00
All-cause mortality rate in 2011 by clinical episode	-0.15	0.02
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.22	-0.09
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.12	0.16
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.06	-0.10
Emergency Room rate by clinical episode in 2011	-0.09	-0.04
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.18	0.05

* These variables were not included for this model.

** Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.80 and the standard deviation was 1.83.

[1] Continuous values for these variables were coarsened to indicator variables to identify continuous values above the 50th percentile.

Exhibit E.1.l: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 18, Other Vascular Surgery

Variable	Episode 18 (Other Vascular Surgery)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.17	0.00
Ownership - Government	-0.52	-0.06
Ownership - For Profit*	0.25	0.04
Urban	0.48	0.09
Bed Count	0.35	-0.11
Chain Indicator	-0.07	-0.11
Medicare Days as a Percent of Total Inpatient Days	-0.22	0.00
Resident-Bed Ratio	0.25	-0.12
Disproportionate Share Percent	-0.16	0.06
Teaching Status	0.21	-0.12
Population Size of Market Area	0.38	0.02
Median Household Income	0.64	0.00
Medicare Advantage Penetration	0.09	0.04
Primary Care Providers per 10,000 in Market	0.10	-0.01
SNF Beds per 10,000 in Market	-0.14	-0.05
Inpatient Rehabilitation Facility in Market	0.56	-0.04
Provider Market Share of the 48 potential BPCI episodes	-0.63	-0.09
Herfindahl Index of Hospital Market Shares	-0.65	-0.09
Percentage of total discharges in the 48 clinical episodes in 2011	-0.01	0.11
Number of discharges for clinical episode in 2011	0.26	-0.15
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.64	-0.14
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.27	0.05
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.40	0.05
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.14	0.01
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.11	0.08
Unplanned readmission rate by clinical episode in 2011	0.35	-0.09
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.04	0.12
All-cause mortality rate in 2011 by clinical episode	0.02	0.00
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.07	0.08
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.41	0.06
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.16	0.00
Emergency Room rate by clinical episode in 2011	-0.32	-0.06
Change in Emergency room rate by clinical episode from 2011 to 2012	0.07	0.06

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.19 and the standard deviation was 1.63.

Exhibit E.1.m: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 20, Gastrointestinal Hemorrhage

Variable	Episode 20 (Gastrointestinal Hemorrhage)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.26	0.01
Ownership - Government	-0.68	-0.06
Ownership - For Profit*	0.27	0.01
Urban	0.74	0.03
Bed Count	0.56	-0.06
Chain Indicator	-0.23	0.08
Medicare Days as a Percent of Total Inpatient Days	-0.28	-0.04
Resident-Bed Ratio	0.34	-0.10
Disproportionate Share Percent	-0.13	0.03
Teaching Status	0.27	-0.05
Population Size of Market Area	0.52	-0.02
Median Household Income	0.74	-0.04
Medicare Advantage Penetration	0.16	0.04
Primary Care Providers per 10,000 in Market	0.40	-0.05
SNF Beds per 10,000 in Market	-0.36	-0.04
Inpatient Rehabilitation Facility in Market	0.85	0.02
Provider Market Share of the 48 potential BPCI episodes	-0.51	-0.01
Herfindahl Index of Hospital Market Shares	-0.64	0.01
Percentage of total discharges in the 48 clinical episodes in 2011	-0.28	0.03
Number of discharges for clinical episode in 2011	0.64	0.00
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.34	0.04
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.21	0.02
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.17	-0.01
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.15	0.03
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.19	-0.06
Unplanned readmission rate by clinical episode in 2011	0.18	0.01
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.04	-0.02
All-cause mortality rate in 2011 by clinical episode	-0.13	-0.05
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.00	0.07
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.27	0.04
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.04	-0.08
Emergency Room rate by clinical episode in 2011	-0.29	-0.05
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.09	0.05

* These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.49 and the standard deviation was 1.83.

Exhibit E.1.n: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 21, Major Bowel Procedure

Variable	Episode 21 (Major Bowel Procedure)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.12	0.05
Ownership - Government	-0.51	0.00
Ownership - For Profit*	0.31	-0.05
Urban	0.66	0.04
Bed Count	0.51	0.04
Chain Indicator	-0.12	-0.13
Medicare Days as a Percent of Total Inpatient Days	-0.24	-0.03
Resident-Bed Ratio	0.40	0.01
Disproportionate Share Percent	-0.11	-0.02
Teaching Status	0.39	-0.02
Population Size of Market Area	0.45	0.07
Median Household Income	0.62	0.06
Medicare Advantage Penetration	0.08	-0.04
Primary Care Providers per 10,000 in Market	0.40	0.06
SNF Beds per 10,000 in Market	-0.20	-0.02
Inpatient Rehabilitation Facility in Market	0.72	-0.03
Provider Market Share of the 48 potential BPCI episodes	-0.61	-0.01
Herfindahl Index of Hospital Market Shares	-0.74	-0.01
Percentage of total discharges in the 48 clinical episodes in 2011	-0.41	-0.02
Number of discharges for clinical episode in 2011	0.46	0.09
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.70	0.01
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.31	-0.06
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.06	0.03
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.28	-0.05
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.47	0.03
Unplanned readmission rate by clinical episode in 2011	0.27	0.07
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.10	-0.05
All-cause mortality rate in 2011 by clinical episode	-0.10	-0.08
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.02	0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.45	-0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.02	-0.05
Emergency Room rate by clinical episode in 2011	-0.21	-0.03
Change in Emergency room rate by clinical episode from 2011 to 2012	0.31	0.01

* This variable was not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.33 and the standard deviation was 1.51.

Exhibit E.1.o: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 22, Fractures of the Femur and Hip or Pelvis

Variable	Episode 22 (Fractures of the Femur and Hip or Pelvis)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.16	-0.04
Ownership - Government	-0.46	0.01
Ownership - For Profit*	0.25	0.03
Urban	0.58	-0.02
Bed Count	0.37	-0.02
Chain Indicator	-0.11	0.01
Medicare Days as a Percent of Total Inpatient Days	-0.15	0.05
Resident-Bed Ratio	0.28	-0.07
Disproportionate Share Percent	-0.24	0.03
Teaching Status	0.31	-0.03
Population Size of Market Area	0.24	0.05
Median Household Income	0.54	0.01
Medicare Advantage Penetration	0.02	-0.06
Primary Care Providers per 10,000 in Market	0.51	0.01
SNF Beds per 10,000 in Market	-0.18	0.05
Inpatient Rehabilitation Facility in Market	0.55	0.01
Provider Market Share of the 48 potential BPCI episodes	-0.66	0.01
Herfindahl Index of Hospital Market Shares	-0.71	0.01
Percentage of total discharges in the 48 clinical episodes in 2011	-0.18	0.05
Number of discharges for clinical episode in 2011	0.45	0.00
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.27	-0.06
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	-0.16	0.00
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.40	0.05
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.01	0.00
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	-0.18	-0.01
Unplanned readmission rate by clinical episode in 2011	0.09	0.01
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.04	0.01
All-cause mortality rate in 2011 by clinical episode	-0.21	-0.06
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.01	0.05
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.24	0.06
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.02	-0.01
Emergency Room rate by clinical episode in 2011	0.09	-0.01
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.18	0.05

* These variables were not included for this model.
** Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.87 and the standard deviation was 1.44.

Exhibit E.1.p: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 23, Medical Non-infectious Orthopedic

Variable	Episode 23 (Medical Non-infectious Orthopedic)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.08	0.02
Ownership - Government	-0.42	-0.04
Ownership - For Profit*	0.48	0.00
Urban	0.90	0.05
Bed Count	0.39	-0.01
Chain Indicator	-0.21	-0.02
Medicare Days as a Percent of Total Inpatient Days	-0.33	0.00
Resident-Bed Ratio	0.11	-0.03
Disproportionate Share Percent	-0.14	0.02
Teaching Status	0.24	-0.07
Population Size of Market Area	0.38	-0.02
Median Household Income	0.70	0.00
Medicare Advantage Penetration	0.20	-0.03
Primary Care Providers per 10,000 in Market	0.38	-0.05
SNF Beds per 10,000 in Market	-0.54	0.05
Inpatient Rehabilitation Facility in Market	0.72	0.02
Provider Market Share of the 48 potential BPCI episodes	-0.67	0.03
Herfindahl Index of Hospital Market Shares	-0.78	0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.25	-0.01
Number of discharges for clinical episode in 2011	0.52	-0.02
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.29	0.01
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.26	0.05
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.08	-0.06
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.13	0.02
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	-0.07	0.03
Unplanned readmission rate by clinical episode in 2011	-0.01	0.02
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.05	0.04
All-cause mortality rate in 2011 by clinical episode	-0.06	-0.01
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.10	-0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.45	-0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.12	0.07
Emergency Room rate by clinical episode in 2011	-0.23	0.02
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.06	-0.04

* This variable was not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.92 and the standard deviation was 1.88.

Exhibit E.1.q: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 25, Revision of the Hip or Knee

Variable	Episode 25 (Revision of the Hip or Knee)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.00	0.05
Ownership - Government	-0.30	-0.07
Ownership - For Profit*	0.27	-0.01
Urban*	N/A	N/A
Bed Count	0.38	0.18
Chain Indicator	-0.08	-0.09
Medicare Days as a Percent of Total Inpatient Days	-0.07	-0.05
Resident-Bed Ratio	0.07	0.02
Disproportionate Share Percent	-0.07	0.16
Teaching Status	0.38	0.00
Population Size of Market Area	0.18	0.02
Median Household Income	0.34	0.01
Medicare Advantage Penetration	0.10	0.05
Primary Care Providers per 10,000 in Market	0.28	-0.05
SNF Beds per 10,000 in Market	0.06	0.05
Inpatient Rehabilitation Facility in Market	0.25	-0.01
Provider Market Share of the 48 potential BPCI episodes	-0.33	0.00
Herfindahl Index of Hospital Market Shares	-0.46	-0.05
Percentage of total discharges in the 48 clinical episodes in 2011	0.01	-0.16
Number of discharges for clinical episode in 2011	0.51	-0.05
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.49	0.10
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	-0.10	0.07
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.51	-0.01
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.04	0.14
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	-0.10	-0.11
Unplanned readmission rate by clinical episode in 2011	0.22	0.12
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.11	-0.06
All-cause mortality rate in 2011 by clinical episode	-0.09	-0.08
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.15	0.06
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.43	0.07
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.23	-0.03
Emergency Room rate by clinical episode in 2011	-0.11	-0.04
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.04	-0.01

* This variable was not included for this model.

**Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.89 and the standard deviation was 1.77.

N/A - not available as all participants were from urban settings.

Exhibit E.1.r: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 26, Spinal Fusion (non-cervical)

Variable	Episode 26 (Spinal Fusion (non-cervical))	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.17	0.00
Ownership - Government	-0.51	0.04
Ownership - For Profit*	0.19	-0.02
Urban	0.39	-0.05
Bed Count	0.29	0.04
Chain Indicator	-0.21	0.02
Medicare Days as a Percent of Total Inpatient Days	-0.06	-0.02
Resident-Bed Ratio	0.34	0.02
Disproportionate Share Percent	-0.04	0.00
Teaching Status	0.29	0.01
Population Size of Market Area	0.14	0.01
Median Household Income	0.43	0.01
Medicare Advantage Penetration	-0.03	-0.04
Primary Care Providers per 10,000 in Market	0.32	0.00
SNF Beds per 10,000 in Market	-0.05	0.01
Inpatient Rehabilitation Facility in Market	0.64	0.06
Provider Market Share of the 48 potential BPCI episodes	-0.49	0.00
Herfindahl Index of Hospital Market Shares	-0.49	0.01
Percentage of total discharges in the 48 clinical episodes in 2011	-0.11	-0.01
Number of discharges for clinical episode in 2011	0.45	0.05
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.36	-0.12
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.34	0.05
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.14	-0.05
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.09	0.03
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.00	0.16
Unplanned readmission rate by clinical episode in 2011	0.19	0.04
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.03	0.09
All-cause mortality rate in 2011 by clinical episode	0.01	-0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.07	0.07
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.47	0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.03	0.05
Emergency Room rate by clinical episode in 2011	-0.16	0.04
Change in Emergency room rate by clinical episode from 2011 to 2012	0.32	-0.07

*These variables were not included for this model.
**Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.74 and the standard deviation was 1.75.

Exhibit E.1.s: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 27, Hip & Femur Procedures Except Major Joint

Variable	Episode 27 (Hip & femur procedures except major joint)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.03	-0.02
Ownership - Government	-0.49	0.02
Ownership - For Profit*	0.40	0.01
Urban	0.86	0.00
Bed Count	0.49	-0.01
Chain Indicator	-0.13	-0.03
Medicare Days as a Percent of Total Inpatient Days	-0.28	-0.03
Resident-Bed Ratio	0.25	0.01
Disproportionate Share Percent	-0.09	0.02
Teaching Status	0.35	-0.01
Population Size of Market Area	0.36	-0.02
Median Household Income	0.64	-0.01
Medicare Advantage Penetration	0.12	0.02
Primary Care Providers per 10,000 in Market	0.44	-0.01
SNF Beds per 10,000 in Market	-0.40	0.03
Inpatient Rehabilitation Facility in Market	0.71	0.01
Provider Market Share of the 48 potential BPCI episodes	-0.61	-0.03
Herfindahl Index of Hospital Market Shares	-0.76	-0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.33	-0.05
Number of discharges for clinical episode in 2011	0.45	-0.04
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.27	-0.01
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.23	0.05
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	-0.10	-0.05
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.09	0.00
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	-0.20	0.02
Unplanned readmission rate by clinical episode in 2011	0.25	-0.03
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.06	0.04
All-cause mortality rate in 2011 by clinical episode	-0.02	0.00
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.04	0.05
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.37	0.00
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.01	0.04
Emergency Room rate by clinical episode in 2011	-0.22	-0.01
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.05	0.01

*These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.70 and the standard deviation was 1.87.

Exhibit E.1.t: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 28, Cervical Spinal Fusion

Variable	Episode 28 (Cervical Spinal Fusion)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.06	0.17
Ownership - Government	-0.49	-0.11
Ownership - For Profit*	0.31	-0.13
Urban	0.25	-0.11
Bed Count	0.39	-0.03
Chain Indicator	-0.13	0.02
Medicare Days as a Percent of Total Inpatient Days	-0.25	-0.03
Resident-Bed Ratio	0.46	0.19
Disproportionate Share Percent	0.07	0.06
Teaching Status	0.46	0.06
Population Size of Market Area	0.25	-0.03
Median Household Income	0.56	-0.04
Medicare Advantage Penetration	0.08	-0.04
Primary Care Providers per 10,000 in Market	0.31	0.08
SNF Beds per 10,000 in Market	0.04	0.06
Inpatient Rehabilitation Facility in Market	0.60	-0.17
Provider Market Share of the 48 potential BPCI episodes	-0.46	0.11
Herfindahl Index of Hospital Market Shares	-0.51	0.16
Percentage of total discharges in the 48 clinical episodes in 2011	-0.16	-0.06
Number of discharges for clinical episode in 2011	0.33	0.09
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.29	0.11
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.17	0.03
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.14	-0.11
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.15	-0.10
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.22	-0.10
Unplanned readmission rate by clinical episode in 2011	0.01	-0.07
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.19	-0.02
All-cause mortality rate in 2011 by clinical episode	-0.16	-0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.17	-0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.03	-0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.12	0.03
Emergency Room rate by clinical episode in 2011	-0.28	-0.07
Change in Emergency room rate by clinical episode from 2011 to 2012	0.43	0.10

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.24 and the standard deviation was 2.16.

Exhibit E.1.u: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 33, Lower Extremity and Humerus Procedure Except Hip, Foot, Femur

Variable	Episode 33 (Lower Extremity and Humerus Procedure Except Hip, Foot, Femur)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.19	0.02
Ownership - Government	-0.44	0.05
Ownership - For Profit*	0.20	-0.05
Urban	0.54	-0.09
Bed Count	0.33	0.10
Chain Indicator	-0.13	-0.07
Medicare Days as a Percent of Total Inpatient Days	-0.04	0.09
Resident-Bed Ratio	0.05	-0.06
Disproportionate Share Percent	-0.19	-0.04
Teaching Status	0.21	-0.07
Population Size of Market Area	0.35	0.05
Median Household Income	0.38	0.00
Medicare Advantage Penetration	-0.04	-0.05
Primary Care Providers per 10,000 in Market	0.59	0.07
SNF Beds per 10,000 in Market	0.06	-0.01
Inpatient Rehabilitation Facility in Market	0.50	-0.03
Provider Market Share of the 48 potential BPCI episodes	-0.60	0.03
Herfindahl Index of Hospital Market Shares	-0.59	0.04
Percentage of total discharges in the 48 clinical episodes in 2011	-0.03	-0.06
Number of discharges for clinical episode in 2011	0.35	0.11
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.43	0.01
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	-0.04	-0.02
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.39	-0.03
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.22	0.09
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	-0.07	0.05
Unplanned readmission rate by clinical episode in 2011	0.06	-0.02
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.19	0.01
All-cause mortality rate in 2011 by clinical episode	0.07	0.00
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.08	0.04
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.51	0.04
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.25	-0.07
Emergency Room rate by clinical episode in 2011	0.03	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.14	0.00

* These variables were not included for this model.
** Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was-4.20 and the standard deviation was 1.63.

Exhibit E.1.v: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 35, Sepsis

Variable	Episode 35 (Sepsis)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.05	0.09
Ownership - Government	-0.58	-0.02
Ownership - For Profit*	0.43	-0.08
Urban	0.81	0.02
Bed Count	0.47	-0.04
Chain Indicator	-0.20	-0.02
Medicare Days as a Percent of Total Inpatient Days	-0.26	-0.07
Resident-Bed Ratio	0.17	-0.01
Disproportionate Share Percent	-0.03	-0.05
Teaching Status	0.28	-0.04
Population Size of Market Area	0.34	0.03
Median Household Income	0.55	0.02
Medicare Advantage Penetration	0.21	0.02
Primary Care Providers per 10,000 in Market	0.21	0.00
SNF Beds per 10,000 in Market	-0.55	-0.03
Inpatient Rehabilitation Facility in Market	0.53	0.01
Provider Market Share of the 48 potential BPCI episodes	-0.45	-0.04
Herfindahl Index of Hospital Market Shares	-0.62	-0.03
Percentage of total discharges in the 48 clinical episodes in 2011	-0.28	-0.07
Number of discharges for clinical episode in 2011	0.47	-0.08
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.38	-0.07
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.38	0.07
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.08	0.00
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.23	0.04
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.00	0.02
Unplanned readmission rate by clinical episode in 2011	0.31	-0.02
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.01	0.01
All-cause mortality rate in 2011 by clinical episode	0.25	0.01
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.07	0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.52	0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.01	0.05
Emergency Room rate by clinical episode in 2011	-0.29	0.04
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.03	-0.02

*These variables were not included for this model.

**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.74 and the standard deviation was 1.86.

Exhibit E.1.w: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 36, Diabetes

Variable	Episode 36 (Diabetes)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.41	0.06
Ownership - Government	-0.64	0.04
Ownership - For Profit*	0.08	-0.08
Urban	0.87	-0.11
Bed Count	0.56	0.11
Chain Indicator	-0.34	0.03
Medicare Days as a Percent of Total Inpatient Days	-0.40	-0.04
Resident-Bed Ratio	0.16	0.14
Disproportionate Share Percent	0.03	-0.01
Teaching Status	0.30	0.06
Population Size of Market Area	0.46	0.01
Median Household Income	0.64	0.01
Medicare Advantage Penetration	0.36	0.00
Primary Care Providers per 10,000 in Market	0.39	0.04
SNF Beds per 10,000 in Market	-0.58	-0.01
Inpatient Rehabilitation Facility in Market	0.46	-0.03
Provider Market Share of the 48 potential BPCI episodes	-0.55	0.04
Herfindahl Index of Hospital Market Shares	-0.71	0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.18	-0.11
Number of discharges for clinical episode in 2011	0.61	0.15
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.30	-0.01
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.17	0.00
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.09	0.01
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.01	-0.01
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.29	0.01
Unplanned readmission rate by clinical episode in 2011	0.03	-0.03
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.04	0.05
All-cause mortality rate in 2011 by clinical episode	0.13	0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.05	0.00
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.34	-0.07
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.03	0.06
Emergency Room rate by clinical episode in 2011	-0.07	-0.07
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.10	0.05

*These variables were not included for this model.
**Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.78 and the standard deviation was 2.07.

Exhibit E.1.x: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 37, Simple Pneumonia and Respiratory Infections

Variable	Episode 37 (Simple pneumonia and respiratory infections)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.23	-0.08
Ownership - Government	-0.56	-0.01
Ownership - For Profit*	0.23	0.09
Urban	0.84	-0.05
Bed Count	0.47	0.02
Chain Indicator	-0.08	-0.01
Medicare Days as a Percent of Total Inpatient Days	-0.25	-0.02
Resident-Bed Ratio	0.08	0.00
Disproportionate Share Percent	-0.13	0.04
Teaching Status	0.24	-0.04
Population Size of Market Area	0.30	0.00
Median Household Income	0.61	-0.02
Medicare Advantage Penetration	0.20	0.05
Primary Care Providers per 10,000 in Market	0.43	-0.02
SNF Beds per 10,000 in Market	-0.46	-0.04
Inpatient Rehabilitation Facility in Market	0.36	-0.02
Provider Market Share of the 48 potential BPCI episodes	-0.40	-0.03
Herfindahl Index of Hospital Market Shares	-0.55	-0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.21	-0.02
Number of discharges for clinical episode in 2011	0.59	0.01
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.48	0.03
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.29	-0.01
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.26	0.00
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.06	0.00
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.20	-0.05
Unplanned readmission rate by clinical episode in 2011	0.09	0.07
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.05	-0.02
All-cause mortality rate in 2011 by clinical episode	0.11	0.03
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.06	0.00
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.40	0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.04	-0.02
Emergency Room rate by clinical episode in 2011	-0.33	0.01
Change in Emergency room rate by clinical episode from 2011 to 2012	0.04	-0.02

*These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.49 and the standard deviation was 1.66.

Exhibit E.1.y: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 38, Other Respiratory

Variable	Episode 38 (Other Respiratory)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.23	-0.01
Ownership - Government	-0.59	-0.04
Ownership - For Profit*	0.24	0.02
Urban	0.66	0.01
Bed Count	0.43	0.07
Chain Indicator	-0.22	-0.04
Medicare Days as a Percent of Total Inpatient Days	-0.11	0.02
Resident-Bed Ratio	0.24	0.09
Disproportionate Share Percent	-0.16	-0.01
Teaching Status	0.23	0.10
Population Size of Market Area	0.33	0.09
Median Household Income	0.63	0.02
Medicare Advantage Penetration	0.14	-0.08
Primary Care Providers per 10,000 in Market	0.28	0.10
SNF Beds per 10,000 in Market	-0.39	0.07
Inpatient Rehabilitation Facility in Market	0.59	0.07
Provider Market Share of the 48 potential BPCI episodes	-0.47	-0.04
Herfindahl Index of Hospital Market Shares	-0.60	-0.05
Percentage of total discharges in the 48 clinical episodes in 2011	-0.11	-0.10
Number of discharges for clinical episode in 2011	0.54	-0.02
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.51	-0.03
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.22	-0.02
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.21	0.04
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.18	-0.11
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode	0.17	0.14
Unplanned readmission rate by clinical episode in 2011	0.13	0.08
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.02	-0.04
All-cause mortality rate in 2011 by clinical episode	0.19	0.00
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.08	0.00
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.24	-0.01
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.02	0.01
Emergency Room rate by clinical episode in 2011	-0.42	0.04
Change in Emergency room rate by clinical episode from 2011 to 2012	0.09	-0.02

*These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.27 and the standard deviation was 1.74.

Exhibit E.1.z: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 42, Gastrointestinal Obstruction

Variable	Episode 42 (Gastrointestinal Obstruction)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.29	-0.02
Ownership - Government	-0.56	0.00
Ownership - For Profit*	0.17	0.02
Urban	0.70	0.09
Bed Count	0.57	-0.12
Chain Indicator	-0.12	-0.03
Medicare Days as a Percent of Total Inpatient Days	-0.28	-0.07
Resident-Bed Ratio	0.32	-0.04
Disproportionate Share Percent	-0.29	0.02
Teaching Status	0.30	-0.13
Population Size of Market Area	0.40	0.03
Median Household Income	0.62	0.04
Medicare Advantage Penetration	0.12	0.08
Primary Care Providers per 10,000 in Market	0.32	0.00
SNF Beds per 10,000 in Market	-0.29	-0.10
Inpatient Rehabilitation Facility in Market	0.45	-0.07
Provider Market Share of the 48 potential BPCI episodes	-0.48	-0.04
Herfindahl Index of Hospital Market Shares	-0.60	-0.03
Percentage of total discharges in the 48 clinical episodes in 2011	-0.39	-0.07
Number of discharges for clinical episode in 2011	0.61	-0.15
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.14	0.03
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	-0.01	0.01
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.11	0.00
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.10	-0.02
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.10	-0.04
Unplanned readmission rate by clinical episode in 2011	0.16	0.11
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.04	-0.12
All-cause mortality rate in 2011 by clinical episode	-0.06	0.00
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.15	0.09
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.26	0.10
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.12	-0.07
Emergency Room rate by clinical episode in 2011	-0.08	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.08	-0.02

* These variables were not included for this model.

** Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.19 and the standard deviation was 1.45.

Exhibit E.1.aa: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 43, Syncope & Collapse

Variable	Episode 43 (Syncope & Collapse)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.10	0.01
Ownership - Government	-0.41	0.02
Ownership - For Profit*	0.47	-0.03
Urban*	N/A	N/A
Bed Count	0.10	-0.01
Chain Indicator	-0.18	-0.02
Medicare Days as a Percent of Total Inpatient Days	-0.18	-0.10
Resident-Bed Ratio	0.00	-0.01
Disproportionate Share Percent	-0.10	0.03
Teaching Status	-0.05	-0.04
Population Size of Market Area	0.33	-0.01
Median Household Income	0.45	0.03
Medicare Advantage Penetration	0.09	0.02
Primary Care Providers per 10,000 in Market	0.04	0.01
SNF Beds per 10,000 in Market	-0.55	-0.09
Inpatient Rehabilitation Facility in Market	0.43	0.04
Provider Market Share of the 48 potential BPCI episodes	-0.49	-0.05
Herfindahl Index of Hospital Market Shares	-0.45	-0.03
Percentage of total discharges in the 48 clinical episodes in 2011	0.22	-0.03
Number of discharges for clinical episode in 2011	0.39	-0.09
Percent of patients in 2011 that went home with no post-acute care by clinical episode	0.11	0.00
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.06	0.06
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	-0.13	0.00
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	-0.20	-0.04
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	-0.02	-0.03
Unplanned readmission rate by clinical episode in 2011	0.06	-0.06
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.03	0.04
All-cause mortality rate in 2011 by clinical episode	0.04	-0.01
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.03	0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.14	0.01
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.15	0.00
Emergency Room rate by clinical episode in 2011	-0.33	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	0.13	0.04

* These variables were not included for this model.

** Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.07 and the standard deviation was 1.47.

N/A - not available as all participants were from urban settings.

Exhibit E.1.ab: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 44, Renal Failure

Variable	Episode 44 (Renal failure)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.06	-0.08
Ownership - Government	-0.56	0.06
Ownership - For Profit*	0.40	0.06
Urban	0.89	0.01
Bed Count	0.49	0.01
Chain Indicator	-0.09	0.01
Medicare Days as a Percent of Total Inpatient Days	-0.35	-0.04
Resident-Bed Ratio	0.10	-0.04
Disproportionate Share Percent	0.03	-0.01
Teaching Status	0.19	-0.05
Population Size of Market Area	0.44	-0.02
Median Household Income	0.59	0.02
Medicare Advantage Penetration	0.34	-0.03
Primary Care Providers per 10,000 in Market	0.29	-0.01
SNF Beds per 10,000 in Market	-0.52	-0.01
Inpatient Rehabilitation Facility in Market	0.60	0.00
Provider Market Share of the 48 potential BPCI episodes	-0.54	-0.05
Herfindahl Index of Hospital Market Shares	-0.69	-0.05
Percentage of total discharges in the 48 clinical episodes in 2011	-0.25	-0.04
Number of discharges for clinical episode in 2011	0.57	-0.03
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.31	-0.01
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.41	0.01
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.01	0.01
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.05	0.04
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.21	-0.03
Unplanned readmission rate by clinical episode in 2011	0.21	0.01
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.04	0.01
All-cause mortality rate in 2011 by clinical episode	-0.30	-0.01
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.13	-0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.38	0.01
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.01	-0.07
Emergency Room rate by clinical episode in 2011	-0.17	0.04
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.04	0.03

*These variables were not included for this model.
**Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.20 and the standard deviation was 1.88.

Exhibit E.1.ac: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 45, Nutritional and Metabolic Disorders

Variable	Episode 45 (Nutritional and metabolic disorders)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.32	-0.04
Ownership - Government	-0.70	-0.03
Ownership - For Profit*	0.22	0.06
Urban	0.91	0.11
Bed Count	0.59	0.03
Chain Indicator	-0.10	0.04
Medicare Days as a Percent of Total Inpatient Days	-0.43	0.03
Resident-Bed Ratio	0.20	-0.01
Disproportionate Share Percent	0.11	0.01
Teaching Status	0.24	0.02
Population Size of Market Area	0.51	0.04
Median Household Income	0.75	0.03
Medicare Advantage Penetration	0.42	-0.04
Primary Care Providers per 10,000 in Market	0.32	0.00
SNF Beds per 10,000 in Market	-0.58	-0.04
Inpatient Rehabilitation Facility in Market	0.43	0.01
Provider Market Share of the 48 potential BPCI episodes	-0.49	-0.03
Herfindahl Index of Hospital Market Shares	-0.64	-0.03
Percentage of total discharges in the 48 clinical episodes in 2011	-0.31	-0.05
Number of discharges for clinical episode in 2011	0.55	0.04
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.23	0.11
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.30	-0.14
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.11	-0.06
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.09	0.04
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.05	0.00
Unplanned readmission rate by clinical episode in 2011	-0.02	-0.01
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.04	0.02
All-cause mortality rate in 2011 by clinical episode	0.01	0.05
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.17	0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.36	-0.07
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.14	-0.01
Emergency Room rate by clinical episode in 2011	-0.30	-0.07
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.05	0.11

* This variable was not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.77 and the standard deviation was 2.18.

Exhibit E.1.ad: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 46, Cellulitis

Variable	Episode 46 (Cellulitis)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.36	0.02
Ownership - Government	-0.65	0.03
Ownership - For Profit*	0.14	-0.03
Urban	0.83	-0.05
Bed Count	0.50	0.02
Chain Indicator	-0.02	0.05
Medicare Days as a Percent of Total Inpatient Days	-0.27	-0.01
Resident-Bed Ratio	0.15	0.00
Disproportionate Share Percent	-0.15	-0.06
Teaching Status	0.23	-0.01
Population Size of Market Area	0.38	-0.05
Median Household Income	0.62	0.02
Medicare Advantage Penetration	0.24	0.02
Primary Care Providers per 10,000 in Market	0.30	-0.02
SNF Beds per 10,000 in Market	-0.48	0.05
Inpatient Rehabilitation Facility in Market	0.50	-0.01
Provider Market Share of the 48 potential BPCI episodes	-0.34	0.05
Herfindahl Index of Hospital Market Shares	-0.52	0.05
Percentage of total discharges in the 48 clinical episodes in 2011	-0.20	-0.03
Number of discharges for clinical episode in 2011	0.72	0.06
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.38	0.07
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.28	0.04
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.07	-0.05
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.05	-0.05
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.28	-0.03
Unplanned readmission rate by clinical episode in 2011	0.15	0.01
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.03	-0.01
All-cause mortality rate in 2011 by clinical episode	0.12	0.00
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.03	0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.35	-0.07
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.05	0.01
Emergency Room rate by clinical episode in 2011	-0.05	0.02
Change in Emergency room rate by clinical episode from 2011 to 2012	0.06	-0.03

*These variables were not included for this model.
**Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.18 and the standard deviation was 1.86.

Exhibit E.1.ae: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 48, Transient Ischemia

Variable	Episode 48 (Transient Ischemia)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.10	0.00
Ownership - Government	-0.51	-0.04
Ownership - For Profit*	0.32	0.02
Urban	0.71	-0.04
Bed Count	0.63	-0.03
Chain Indicator	-0.08	-0.05
Medicare Days as a Percent of Total Inpatient Days	-0.42	-0.05
Resident-Bed Ratio	0.42	0.01
Disproportionate Share Percent	-0.01	0.03
Teaching Status	0.61	0.00
Population Size of Market Area	0.55	-0.05
Median Household Income	0.57	-0.04
Medicare Advantage Penetration	0.38	0.07
Primary Care Providers per 10,000 in Market	0.25	-0.05
SNF Beds per 10,000 in Market	-0.48	0.04
Inpatient Rehabilitation Facility in Market	0.52	-0.01
Provider Market Share of the 48 potential BPCI episodes	-0.66	-0.02
Herfindahl Index of Hospital Market Shares	-0.83	-0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.33	0.02
Number of discharges for clinical episode in 2011	0.72	0.00
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.10	-0.04
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	-0.02	0.11
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	-0.05	0.07
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.08	-0.04
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.19	-0.06
Unplanned readmission rate by clinical episode in 2011	0.25	0.07
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.09	-0.03
All-cause mortality rate in 2011 by clinical episode	0.06	0.05
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.25	0.00
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.22	0.08
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.10	-0.06
Emergency Room rate by clinical episode in 2011	-0.11	-0.04
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.18	0.07

* These variables were not included for this model.

** Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.90 and the standard deviation was 1.88.

Exhibit E.1.af: Standardized Differences Before and After Matching Model 2, Acute Care Hospitals, Episode 49, Esophagitis, Gastroenteritis and Other Digestive Disorders

Variable	Episode 49 (Esophagitis, Gastroenteritis and Other Digestive Disorders)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.23	-0.02
Ownership - Government	-0.69	0.06
Ownership - For Profit*	0.30	0.00
Urban	0.98	0.00
Bed Count	0.60	-0.03
Chain Indicator	-0.22	0.02
Medicare Days as a Percent of Total Inpatient Days	-0.44	-0.05
Resident-Bed Ratio	0.10	-0.05
Disproportionate Share Percent	-0.15	0.01
Teaching Status	0.29	-0.07
Population Size of Market Area	0.50	-0.03
Median Household Income	0.72	-0.01
Medicare Advantage Penetration	0.23	0.01
Primary Care Providers per 10,000 in Market	0.24	-0.04
SNF Beds per 10,000 in Market	-0.80	0.00
Inpatient Rehabilitation Facility in Market	0.67	-0.02
Provider Market Share of the 48 potential BPCI episodes	-0.62	-0.01
Herfindahl Index of Hospital Market Shares	-0.80	0.01
Percentage of total discharges in the 48 clinical episodes in 2011	-0.28	0.01
Number of discharges for clinical episode in 2011	0.62	-0.05
Percent of patients in 2011 that went home with no post-acute care by clinical episode	-0.27	-0.08
Percent of patients in 2011 that used an inpatient rehabilitation facility as first post-acute care setting by clinical episode	0.38	0.15
Percent of patients in 2011 that used a SNF as first post-acute care setting by clinical episode	0.07	0.03
Percent of patients in 2011 that used a long-term care hospital as first post-acute care setting by clinical episode	0.08	0.06
Percent of patients in 2011 that went home with HHA services as first post-acute care setting by clinical episode*	0.13	0.01
Unplanned readmission rate by clinical episode in 2011	0.17	-0.02
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.10	-0.04
All-cause mortality rate in 2011 by clinical episode	-0.01	0.00
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.08	-0.03
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.50	0.03
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.21	-0.07
Emergency Room rate by clinical episode in 2011	-0.15	0.05
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.06	-0.08

*These variables were not included for this model.
**Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -5.21 and the standard deviation was 2.55.

Exhibit E.2.a: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 4, Urinary Tract Infection

Variable	Episode 4 (Urinary Tract Infection)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.29	-0.03
Ownership - Government	-0.22	0.06
Ownership - For Profit*	0.36	0.01
Urban Location	0.18	0.00
SNF in Hospital	-0.18	-0.01
Bed Count	0.00	-0.01
Chain Indicator	0.06	0.00
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.29	0.00
Population Size of Market Area	-0.02	0.00
Median Household Income	0.35	0.00
Medicare Advantage Penetration	-0.06	-0.02
SNF Beds per 10,000 in Market	-0.03	-0.01
Inpatient Rehabilitation Facility in Market	0.11	0.00
Provider Market Share of the 48 potential BPCI episodes	-0.04	0.01
Herfindahl Index of Hospital Market Shares	-0.06	0.01
Herfindahl Index of SNF Market Shares	-0.14	0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.31	0.02
Number of discharges for clinical episode in 2011	0.19	0.08
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.03	0.00
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.03	0.00
Unplanned readmission rate by clinical episode in 2011	0.13	0.01
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.06	-0.02
All-cause mortality rate by clinical episode in 2011	0.03	0.01
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.02	0.00
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.15	-0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.05	0.00
Emergency Room rate by clinical episode in 2011	0.08	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.07	-0.02

* These variables were not included for this model.

**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.54 and the standard deviation was 0.95.

Exhibit E.2.b: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 5, Stroke

Variable	Episode 5 (Stroke)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.44	0.03
Ownership - Government*	N/A	N/A
Ownership - For Profit*	0.44	-0.03
Urban Location	0.25	-0.03
SNF in Hospital	-0.26	0.01
Bed Count	-0.04	0.04
Chain Indicator	-0.10	0.05
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.15	-0.02
Population Size of Market Area	-0.01	0.01
Median Household Income	0.19	-0.05
Medicare Advantage Penetration	0.00	-0.01
SNF Beds per 10,000 in Market	0.02	0.07
Inpatient Rehabilitation Facility in Market	0.00	0.05
Provider Market Share of the 48 potential BPCI episodes	-0.14	0.01
Herfindahl Index of Hospital Market Shares	-0.09	-0.01
Herfindahl Index of SNF Market Shares	-0.21	0.00
Percentage of total discharges in the 48 clinical episodes in 2011	-0.19	-0.02
Number of discharges for clinical episode in 2011	0.15	-0.05
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.30	0.01
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.31	0.01
Unplanned readmission rate by clinical episode in 2011	0.12	0.04
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.09	-0.03
All-cause mortality rate by clinical episode in 2011	-0.12	0.07
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.17	-0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.41	0.03
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.26	-0.01
Emergency Room rate by clinical episode in 2011	0.01	0.01
Change in Emergency room rate by clinical episode from 2011 to 2012	0.05	0.01

* These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.40 and the standard deviation was 1.00.
N/A - not available as there are no participants with these characteristics.

Exhibit E.2.c: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 6, Chronic Obstructive Pulmonary Disease, Bronchitis, Asthma

Variable	Episode 6 (Chronic Obstructive Pulmonary Disease, Bronchitis, Asthma)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.31	-0.05
Ownership - Government	-0.13	0.00
Ownership - For Profit*	0.35	0.05
Urban Location	0.26	0.01
SNF in Hospital	-0.32	-0.02
Bed Count	-0.02	0.02
Chain Indicator	-0.16	-0.03
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.26	0.00
Population Size of Market Area	-0.05	0.01
Median Household Income	0.19	0.01
Medicare Advantage Penetration	-0.02	-0.02
SNF Beds per 10,000 in Market	-0.08	-0.01
Inpatient Rehabilitation Facility in Market	0.07	0.03
Provider Market Share of the 48 potential BPCI episodes	-0.03	0.01
Herfindahl Index of Hospital Market Shares	-0.07	0.02
Herfindahl Index of SNF Market Shares	-0.10	0.03
Percentage of total discharges in the 48 clinical episodes in 2011	-0.26	0.03
Number of discharges for clinical episode in 2011	0.13	0.01
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.11	0.05
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.09	0.04
Unplanned readmission rate by clinical episode in 2011	0.06	0.02
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.14	0.03
All-cause mortality rate by clinical episode in 2011	-0.01	-0.02
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.13	0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.32	0.03
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.15	0.00
Emergency Room rate by clinical episode in 2011	-0.05	0.01
Change in Emergency room rate by clinical episode from 2011 to 2012	0.04	-0.05

* These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.41 and the standard deviation was 0.98.

Exhibit E.2.d: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 8, Major Joint Replacement of the Lower Extremity

Variable	Episode 8 (Major Joint Replacement of the Lower Extremity)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.21	-0.01
Ownership - Government	-0.26	0.05
Ownership - For Profit*	0.29	0.01
Urban Location	0.31	0.01
SNF in Hospital	-0.24	0.00
Bed Count	-0.08	-0.01
Chain Indicator	-0.01	0.04
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.16	-0.01
Population Size of Market Area	-0.08	0.01
Median Household Income	0.21	0.00
Medicare Advantage Penetration	0.17	0.01
SNF Beds per 10,000 in Market	-0.13	0.00
Inpatient Rehabilitation Facility in Market	-0.04	-0.03
Provider Market Share of the 48 potential BPCI episodes	-0.11	-0.03
Herfindahl Index of Hospital Market Shares	-0.12	0.00
Herfindahl Index of SNF Market Shares	-0.18	-0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.09	0.00
Number of discharges for clinical episode in 2011	0.07	-0.01
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.05	0.01
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.06	0.01
Unplanned readmission rate by clinical episode in 2011	0.01	-0.02
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.05	0.00
All-cause mortality rate by clinical episode in 2011	0.03	0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.01	-0.03
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.15	0.00
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.21	0.02
Emergency Room rate by clinical episode in 2011	-0.03	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.05	0.01

* These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.13 and the standard deviation was 0.90.

Exhibit E.2.e: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 14, Congestive Heart Failure

Variable	Episode 14 (Congestive Heart Failure)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.30	0.00
Ownership - Government	-0.23	0.05
Ownership - For Profit*	0.37	-0.01
Urban Location	0.35	0.01
SNF in Hospital	-0.26	0.03
Bed Count	-0.04	0.01
Chain Indicator	0.00	0.00
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.22	0.01
Population Size of Market Area	0.07	0.01
Median Household Income	0.31	0.02
Medicare Advantage Penetration	0.07	0.01
SNF Beds per 10,000 in Market	0.01	-0.02
Inpatient Rehabilitation Facility in Market	-0.02	-0.01
Provider Market Share of the 48 potential BPCI episodes	-0.18	0.00
Herfindahl Index of Hospital Market Shares	-0.16	0.00
Herfindahl Index of SNF Market Shares	-0.26	-0.01
Percentage of total discharges in the 48 clinical episodes in 2011	-0.23	0.01
Number of discharges for clinical episode in 2011	0.26	0.04
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.07	-0.02
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.06	-0.02
Unplanned readmission rate by clinical episode in 2011	0.03	0.00
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.05	-0.01
All-cause mortality rate by clinical episode in 2011	-0.03	0.02
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.06	-0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.17	-0.02
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.10	0.01
Emergency Room rate by clinical episode in 2011	0.03	-0.02
Change in Emergency room rate by clinical episode from 2011 to 2012	0.02	0.01

* These variables were not included for this model.
**Caliper was 1/10th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.40 and the standard deviation was 1.06.

Exhibit E.2.f: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 23, Medical Non-infectious Orthopedic

Variable	Episode 23 (Medical Non-infectious Orthopedic)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.60	0.04
Ownership - Government	-0.18	0.01
Ownership - For Profit*	0.64	-0.05
Urban Location	0.20	0.02
SNF in Hospital	-0.35	-0.02
Bed Count	-0.12	0.08
Chain Indicator	-0.23	-0.03
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.04	-0.03
Population Size of Market Area	-0.03	0.05
Median Household Income	0.12	0.03
Medicare Advantage Penetration	0.10	0.01
SNF Beds per 10,000 in Market	-0.08	0.00
Inpatient Rehabilitation Facility in Market	0.02	0.05
Provider Market Share of the 48 potential BPCI episodes	-0.22	-0.02
Herfindahl Index of Hospital Market Shares	-0.16	-0.01
Herfindahl Index of SNF Market Shares	-0.20	-0.01
Percentage of total discharges in the 48 clinical episodes in 2011	-0.33	-0.05
Number of discharges for clinical episode in 2011	0.19	0.04
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.32	0.03
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.32	0.03
Unplanned readmission rate by clinical episode in 2011	0.09	0.05
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.01	-0.01
All-cause mortality rate by clinical episode in 2011	-0.08	0.02
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.02	-0.02
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.44	0.03
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.19	-0.01
Emergency Room rate by clinical episode in 2011	0.09	-0.04
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.01	0.00

* These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.43 and the standard deviation was 1.09.

Exhibit E.2.g: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 27, Hip & Femur Procedures Except Major Joint

Variable	Episode 27 (Hip & Femur Procedures Except Major Joint)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.18	0.02
Ownership - Government	-0.21	-0.02
Ownership - For Profit*	0.25	-0.02
Urban Location	0.24	0.03
SNF in Hospital	-0.27	-0.04
Bed Count	-0.11	0.02
Chain Indicator	0.02	-0.02
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.23	0.04
Population Size of Market Area	-0.03	0.01
Median Household Income	0.18	0.01
Medicare Advantage Penetration	0.18	-0.05
SNF Beds per 10,000 in Market	-0.05	0.01
Inpatient Rehabilitation Facility in Market	-0.03	0.03
Provider Market Share of the 48 potential BPCI episodes	-0.05	0.01
Herfindahl Index of Hospital Market Shares	-0.07	0.00
Herfindahl Index of SNF Market Shares	-0.11	0.01
Percentage of total discharges in the 48 clinical episodes in 2011	0.04	-0.03
Number of discharges for clinical episode in 2011	0.06	-0.01
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.19	-0.01
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.19	0.00
Unplanned readmission rate by clinical episode in 2011	0.11	0.02
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.13	-0.02
All-cause mortality rate by clinical episode in 2011	0.08	-0.03
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.01	0.06
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.29	-0.01
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.18	0.00
Emergency Room rate by clinical episode in 2011	-0.07	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.02	0.00

* These variables were not included for this model.

**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.50 and the standard deviation was 0.87.

Exhibit E.2.h: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 35, Sepsis

Variable	Episode 35 (Sepsis)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.46	0.00
Ownership - Government*	N/A	N/A
Ownership - For Profit*	0.46	0.00
Urban Location	0.24	0.04
SNF in Hospital	-0.24	0.02
Bed Count	-0.17	0.02
Chain Indicator	-0.01	0.01
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.19	0.00
Population Size of Market Area	-0.08	0.00
Median Household Income	0.29	0.00
Medicare Advantage Penetration	0.12	-0.01
SNF Beds per 10,000 in Market	-0.04	-0.02
Inpatient Rehabilitation Facility in Market	-0.11	0.00
Provider Market Share of the 48 potential BPCI episodes	-0.17	0.04
Herfindahl Index of Hospital Market Shares	-0.06	0.02
Herfindahl Index of SNF Market Shares	-0.19	0.03
Percentage of total discharges in the 48 clinical episodes in 2011	-0.15	0.02
Number of discharges for clinical episode in 2011	0.13	0.02
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.09	0.01
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.10	0.01
Unplanned readmission rate by clinical episode in 2011	0.05	0.00
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.09	0.00
All-cause mortality rate by clinical episode in 2011	-0.09	0.01
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.08	0.00
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.18	0.01
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.08	-0.01
Emergency Room rate by clinical episode in 2011	0.02	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.05	0.01

* These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.53 and the standard deviation was 0.97.
N/A - not available as there are no participants with these characteristics.

Exhibit E.2.i: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 37, Simple Pneumonia and Respiratory Infections

Variable	Episode 37 (Simple Pneumonia and Respiratory Infections)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.24	0.00
Ownership - Government	-0.28	0.01
Ownership - For Profit*	0.34	0.00
Urban Location	0.31	-0.01
SNF in Hospital	-0.28	0.00
Bed Count	0.03	-0.04
Chain Indicator	0.04	0.02
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.19	0.00
Population Size of Market Area	0.01	-0.01
Median Household Income	0.37	0.01
Medicare Advantage Penetration	0.02	-0.03
SNF Beds per 10,000 in Market	-0.06	0.01
Inpatient Rehabilitation Facility in Market	0.02	-0.01
Provider Market Share of the 48 potential BPCI episodes	-0.08	-0.01
Herfindahl Index of Hospital Market Shares	-0.12	0.02
Herfindahl Index of SNF Market Shares	-0.18	0.00
Percentage of total discharges in the 48 clinical episodes in 2011	-0.26	0.02
Number of discharges for clinical episode in 2011	0.15	-0.03
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.03	0.00
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.04	0.01
Unplanned readmission rate by clinical episode in 2011	0.13	-0.01
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.12	0.01
All-cause mortality rate by clinical episode in 2011	-0.13	0.02
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.08	-0.01
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.20	0.01
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.09	-0.01
Emergency Room rate by clinical episode in 2011	-0.04	0.00
Change in Emergency room rate by clinical episode from 2011 to 2012	-0.08	0.01

* These variables were not included for this model.

**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.53 and the standard deviation was 1.14.

Exhibit E.2.j: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 38, Other Respiratory

Variable	Episode 38 (Other Respiratory)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.40	-0.02
Ownership - Government*	N/A	N/A
Ownership - For Profit*	0.40	0.02
Urban Location	0.14	-0.01
SNF in Hospital	-0.14	0.01
Bed Count	-0.21	-0.07
Chain Indicator	-0.11	-0.03
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.18	0.03
Population Size of Market Area	-0.09	0.00
Median Household Income	0.20	0.00
Medicare Advantage Penetration	0.06	0.05
SNF Beds per 10,000 in Market	-0.02	-0.03
Inpatient Rehabilitation Facility in Market	0.07	0.03
Provider Market Share of the 48 potential BPCI episodes	-0.12	0.00
Herfindahl Index of Hospital Market Shares	-0.04	-0.04
Herfindahl Index of SNF Market Shares	-0.17	-0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.10	0.03
Number of discharges for clinical episode in 2011	0.14	0.00
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.00	0.00
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	-0.03	0.00
Unplanned readmission rate by clinical episode in 2011	0.26	0.00
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.17	-0.02
All-cause mortality rate by clinical episode in 2011	0.08	-0.02
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.04	0.00
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.14	0.03
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.02	-0.02
Emergency Room rate by clinical episode in 2011	0.02	0.03
Change in Emergency room rate by clinical episode from 2011 to 2012	0.16	-0.05

* These variables were not included for this model.
**Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -2.79 and the standard deviation was 0.78.
N/A - not available as there are no participants with these characteristics.

Exhibit E.2.k: Standardized Differences Before and After Matching Model 3, Skilled Nursing Facilities, Episode 44, Renal Failure

Variable	Episode 44 (Renal Failure)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.47	0.02
Ownership - Government*	N/A	N/A
Ownership - For Profit*	0.47	-0.02
Urban Location	0.15	-0.02
SNF in Hospital	-0.22	-0.02
Bed Count	-0.13	0.05
Chain Indicator	-0.08	0.01
Number of points out of 5 in overall rating and in three areas: Quality, Survey/Health Inspections, and Staffing (from Nursing Home Compare)	0.11	0.02
Population Size of Market Area	-0.05	-0.02
Median Household Income	0.17	-0.01
Medicare Advantage Penetration	-0.01	-0.05
SNF Beds per 10,000 in Market	0.06	0.07
Inpatient Rehabilitation Facility in Market	-0.10	-0.05
Provider Market Share of the 48 potential BPCI episodes	0.03	-0.01
Herfindahl Index of Hospital Market Shares	-0.07	0.00
Herfindahl Index of SNF Market Shares	-0.01	-0.02
Percentage of total discharges in the 48 clinical episodes in 2011	-0.17	0.00
Number of discharges for clinical episode in 2011	0.23	0.04
Number of institutional PAC days per patient with 90 days after an ACH by clinical episode in 2011	0.07	0.00
Number of SNF days per patient within 90 days after an ACH by clinical episode in 2011	0.06	0.00
Unplanned readmission rate by clinical episode in 2011	-0.05	0.04
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.02	-0.07
All-cause mortality rate by clinical episode in 2011	-0.10	0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.04	-0.04
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.09	0.03
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.11	0.01
Emergency Room rate by clinical episode in 2011	-0.10	0.03
Change in Emergency room rate by clinical episode from 2011 to 2012	0.07	-0.04

* These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -3.58 and the standard deviation was 0.91.
N/A - not available as there are no participants with these characteristics.

Exhibit E.3.a: Standardized Differences Before and After Matching Model 3, Home Health Agencies, Episode 8, Major Joint Replacement of the Lower Extremity

Variable	Episode 8 (Major Joint Replacement of the Lower Extremity)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	0.04	-0.05
Ownership - Government*	N/A	N/A
Ownership - For Profit*	-0.04	0.05
Urban	0.13	-0.06
Number of Nurses Employed by an HHA	0.11	-0.07
Population Size of Market Area	-0.13	-0.02
Percentage of total discharges in the 48 clinical episodes in 2011	0.47	0.07
Number of discharges for clinical episode in 2011	0.20	-0.02
Number of HHA days per patient within 90 days after an ACH discharge by clinical episode in 2011	-0.17	-0.03
Unplanned readmission rate by clinical episode in 2011	-0.01	-0.02
Change in unplanned readmission rate by clinical episode from 2011 to 2012	-0.23	0.11
All-cause mortality rate by clinical episode in 2011	-0.05	-0.01
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.03	0.00
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.24	0.04
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.44	0.03
Emergency Room rate by clinical episode in 2011	-0.30	0.01
Change in Emergency room rate by clinical episode from 2011 to 2012	0.28	0.07

* These variables were not included for this model.
**Caliper was 1/4th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.33 and the standard deviation was 0.92.
N/A - not available as there are no participants with these characteristics.

Exhibit E.3.b: Standardized Differences Before and After Matching Model 3, Home Health Agencies, Episode 14, Congestive Heart Failure

Variable	Episode 14 (Congestive Heart Failure)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.28	-0.04
Ownership - Government*	N/A	N/A
Ownership - For Profit*	0.28	0.04
Urban	0.14	-0.02
Number of Nurses Employed by an HHA[1]	0.24	0.18
Population Size of Market Area	-0.11	0.06
Percentage of total discharges in the 48 clinical episodes in 2011*	0.20	0.18
Number of discharges for clinical episode in 2011[1]	0.27	0.15
Number of HHA days per patient within 90 days after an ACH discharge by clinical episode in 2011*	0.33	0.13
Unplanned readmission rate by clinical episode in 2011	-0.08	-0.05
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.27	0.17
All-cause mortality rate by clinical episode in 2011	-0.13	0.04
Change in all-cause mortality rate by clinical episode from 2011 to 2012	0.33	0.16
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.05	0.07
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	0.05	-0.01
Emergency Room rate by clinical episode in 2011	0.07	0.07
Change in Emergency room rate by clinical episode from 2011 to 2012	0.15	0.06

* These variables were not included for this model.
**A Mahalanobis Distance Matching model was used for this episode. There is no caliper.
N/A - not available as there are no participants with these characteristics.
[1] These variables were replaced with indicator variables for values greater than the median.

Exhibit E.3.c: Standardized Differences Before and After Matching Model 3, Home Health Agencies, Episode 37, Simple Pneumonia and Respiratory Infections

Variable	Episode 37 (Simple Pneumonia and Respiratory Infections)	
	Standardized Difference Before Matching	Standardized Difference After Matching**
Ownership - Non-Profit	-0.34	0.00
Ownership - Government*	N/A	N/A
Ownership - For Profit*	0.34	0.00
Urban	0.09	0.00
Number of Nurses Employed by an HHA	0.11	0.10
Population Size of Market Area	-0.40	0.12
Percentage of total discharges in the 48 clinical episodes in 2011	0.26	-0.04
Number of discharges for clinical episode in 2011	0.20	0.10
Number of HHA days per patient within 90 days after an ACH discharge by clinical episode in 2011	0.10	-0.02
Unplanned readmission rate by clinical episode in 2011	0.06	0.00
Change in unplanned readmission rate by clinical episode from 2011 to 2012	0.01	-0.07
All-cause mortality rate by clinical episode in 2011	0.30	0.09
Change in all-cause mortality rate by clinical episode from 2011 to 2012	-0.29	-0.07
Average 90-day standardized Medicare Part A payment amount by clinical episode in 2011	0.16	0.00
Change in average 90-day standardized Medicare Part A payment amount by clinical episode from 2011 to 2012	-0.01	-0.08
Emergency Room rate by clinical episode in 2011	0.07	-0.01
Change in Emergency room rate by clinical episode from 2011 to 2012*	-0.03	-0.06

* These variables were not included for this model.
**Caliper was 1/20th of the standard deviation of the log-odds propensity score. The mean log-odds propensity score was -4.25 and the standard deviation was 0.87.
N/A - not available as there are no participants with these characteristics.

Appendix F: Claim-based Outcome Definitions

We evaluate the impact of BPCI on the utilization of health care services, payment, and quality by measuring a number of outcomes within each of these domains. **Exhibit F.1** includes the complete list of claim-based outcomes included in our analysis, which includes the outcome name and description, organized by domain.

Exhibit F.1: Claim-based Outcomes Definitions

Domain	Outcome Name	Definition/ Description	Measurement Period(s)	Technical Definition	Eligible Sample
Quality	Unplanned Readmission Rate following anchor hospital discharge (Model 2)	Episodes with one or more unplanned, all-cause readmissions after anchor discharge for any eligible condition	30-day Post-discharge, 90-day Post-discharge	Binary outcome (1= at least one readmission during measurement period; 0= no eligible readmissions during measurement period). Eligible readmissions are inpatient prospective payment system claims with a DRG not on the list of excluded DRGs for the given clinical episode. Measure was based on specifications for the NQF-endorsed all-cause unplanned readmission measure (NQF measure 1789). Similar to the NQF-endorsed measure, we excluded planned admissions, based on AHRQ Clinical Classification System Procedure and Diagnoses codes.	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to anchor admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) are discharged from the anchor hospital stay in accordance with medical advice; 5) are living at the time of anchor discharge; 6) have a measurement period that ends on or before December 31, 2016.
Quality	Unplanned Readmission Rate following PAC admission (Model 3)	Episodes with one or more unplanned, all-cause readmissions after PAC admission for any eligible condition	First 30 days of the episode, first 90 days of the episode	Binary outcome (1= at least one readmission during measurement period; 0= no eligible readmissions during measurement period). Eligible readmissions are inpatient prospective payment system claims with a DRG not on the list of excluded DRGs for the given clinical episode. Readmissions must be unplanned, based on AHRQ Clinical Classification System Procedure and Diagnoses codes.	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to qualifying admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) are discharged from the qualifying inpatient hospital in accordance with medical advice; 5) are living at the time of PAC admission; 6) have a measurement period that ends on or before December 31, 2016.

Domain	Outcome Name	Definition/ Description	Measurement Period(s)	Technical Definition	Eligible Sample
Quality	Emergency Department (ED) use without hospitalization following anchor hospital stay (Model 2)	Episodes with one or more ED visit for which the beneficiary requires medical treatment but is not admitted to the hospital after discharge from an anchor hospital stay	30-day Post-discharge, 90-day Post-discharge	Binary outcome (1= at least one ED visit without readmission during measurement period; 0= no eligible ED visits without readmission during measurement period). Eligible ED visits are outpatient claims with a code indicating the beneficiary used the emergency room but was not admitted.	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to anchor admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) are discharged from the anchor hospital in accordance with medical advice; 5) are living at the time of anchor discharge; 6) have a measurement period that ends on or before December 31, 2016
Quality	Emergency Department (ED) use without hospitalization following PAC admission (Model 3)	Episodes with one or more ED visit for which the beneficiary requires medical treatment but is not admitted to the hospital after PAC admission	First 30 days of the episode, first 90 days of the episode	Binary outcome (1= at least one ED visit without hospital readmission during measurement period; 0= no eligible ED visits without hospital readmission during measurement period). Eligible ED visits are outpatient claims with a code indicating the beneficiary used the emergency room but was not admitted.	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to qualifying admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) are discharged from the qualifying inpatient hospital in accordance with medical advice; 5) are living at the time of PAC admission; 6) have a measurement period that ends on or before December 31, 2016.
Quality	All-cause mortality (Model 2)	Death from any cause during measurement period	30-day Post-discharge, 90-day Post-discharge, 120-day Post-discharge	If date of death occurs during measurement period, then mortality outcome =1.	Beneficiaries who: 1) have complete FFS enrollment history six months prior to anchor admission; 2) were not enrolled in the Medicare Hospice program in the six months prior to the anchor admission; 3) have reliable mortality status; 4) maintain FFS A&B enrollment throughout the measurement period or until death; 5) have non-missing age & gender data; 6) are discharged from the anchor hospital in accordance with medical advice; 7) are living at the time of anchor discharge; 8) have a measurement period that ends on or before December 31, 2016. *For beneficiaries with multiple anchor hospitalizations, one hospitalization per quarter is randomly selected for inclusion in this measure.*

Domain	Outcome Name	Definition/ Description	Measurement Period(s)	Technical Definition	Eligible Sample
Quality	All-cause mortality (Model 3)	Death from any cause during measurement period	First 30 days of the episode, first 90 days of the episode	If date of death occurs during measurement period, then mortality outcome =1.	Beneficiaries who: 1) have complete FFS enrollment history six months prior to qualifying admission; 2) were not enrolled in the Medicare Hospice program in the six months prior to the qualifying admission; ; 3) have reliable mortality status; 4) maintain FFS A&B enrollment throughout the measurement period or until death; 5) have non-missing age & gender data; 6) are discharged from the qualifying inpatient hospital in accordance with medical advice; 7) have a measurement period that ends on or before December 31, 2016. *For beneficiaries with multiple qualifying hospitalizations, one hospitalization per quarter is randomly selected for inclusion in this measure.*
Utilization	Acute Inpatient Length of Stay (Models 2 & 3)	Total number of inpatient days during the anchor stay (Model 2) or qualifying stay (Model 3)	Acute	For Model 2, the number of days between the anchor admission date and the anchor discharge date (including any transfer stays). For Model 3, the number of days between the qualifying stay admission date and the qualifying stay discharge date (including any transfer stays). The upper end of this data is winsorized.[1]	Beneficiaries who have: 1) complete FFS enrollment history six months prior to anchor/ qualifying admission; 2) have non-missing age & gender data.
Utilization	Number of days in a SNF (Models 2 & 3)	Total number of SNF days of care	90-day Post-discharge	The total number of days of skilled nursing facility (SNF) care (not necessarily consecutive) during the measurement period. The outcome is limited to patients who had at least one SNF day during the measurement period.	Beneficiaries who: 1) are alive at the time of anchor/qualifying discharge; 2) have non-missing age & gender data; 3) have a complete FFS enrollment history six months prior to anchor/qualifying admission; 4) maintain FFS A&B enrollment throughout the measurement period or until death; 5) have a measurement period that ends on or before December 31, 2016.

[1] Acute inpatient length of stay is winsorized at the 99th percentile for all models by quarter and MS-DRG of the anchor/qualifying stay.

Domain	Outcome Name	Definition/ Description	Measurement Period(s)	Technical Definition	Eligible Sample
Utilization	Total Number of Post-Acute Care Days in an Institutional Setting (Models 2 & 3)	Total number of days of post-acute care in an institutional setting (SNF, IRF, LTCH)	90-day Post-discharge	The total number of days of care (not necessarily consecutive) during the measurement period in all of the following PAC settings: skilled nursing facility (SNF), long-term care hospital (LTCH), and inpatient rehabilitation facility (IRF). The outcome is limited to patients who had at least one day of institutional care during the measurement period.	Beneficiaries who: 1) are alive at the time of anchor/qualifying discharge; 2) have non-missing age & gender data; 3) have a complete FFS enrollment history six months prior to anchor/qualifying admission; 4) maintain FFS A&B enrollment throughout the measurement period or until death; 5) have a measurement period that ends on or before December 31, 2016.
Utilization	Number of home health visits (Models 2 & 3)	Total number of home health visits	90-day post-discharge	The total number of home health visits on home health claims during the period of observation. The outcome is limited to patients who had at least one home health visit during the measurement period.	Beneficiaries who: 1) are alive at the time of anchor/qualifying discharge; 2) have non-missing age & gender data; 3) have a complete FFS enrollment history six months prior to anchor/qualifying admission; 4) maintain FFS A&B enrollment throughout the measurement period or until death; 5) have a measurement period that ends on or before December 31, 2016.
Utilization	First PAC setting following anchor discharge (Model 2)	The first PAC setting following inpatient discharge. Institutional PAC use must have started within 5 days of discharge from anchor hospital or home health must have started within 14 days of discharge from anchor hospital.	The first institutional PAC setting used within 5 days of anchor hospital discharge (SNF, or IRF) or HHA use if started within 14 days of anchor discharge.	The first PAC setting following inpatient discharge. Identified as: ▪ Admission to an IRF (freestanding facility or distinct unit within acute hospital) or SNF within 5 days of discharge from an acute hospital. ▪ Home health care within 14 days of discharge from an acute hospital. ▪ All other patient discharges are classified as discharges to a residential care setting (i.e., "home with none"). Possible outcomes include SNF, IRF, HHA, or home with none.	Beneficiaries who: 1) have complete FFS enrollment history six months prior to anchor admission; 2) have non-missing age & gender data; 3) are alive at the time of anchor discharge; 4) maintain FFS A&B enrollment throughout the measurement period or until death; 5) have a measurement period that ends on or before December 31, 2016.

Domain	Outcome Name	Definition/ Description	Measurement Period(s)	Technical Definition	Eligible Sample
Utilization	Discharged to any PAC (including HHA) (Model 2)	The proportion of BPCI episodes that were discharged from the anchor hospital to any PAC, including HHA.	Within 14 days of discharge from anchor hospital	The proportion of episodes where the first PAC setting (defined above) was equal to SNF, LTCH, IRF, or HHA. The denominator includes all episodes.	Beneficiaries who: 1) have complete FFS enrollment history six months prior to anchor admission; 2) have non-missing age & gender data; 3) are alive at the time of anchor discharge; 4) maintain FFS A&B enrollment throughout the measurement period or until death; 5) have a measurement period that ends on or before December 31, 2016.
Utilization	Discharged to institutional post-acute care setting relative to discharged home with home health (Model 2)	The proportion of BPCI episodes discharged from the anchor hospital to an institutional PAC among BPCI episodes who were discharged to any PAC (including HHA).	Within 14 days of discharge from anchor hospital	The proportion of episodes where the first PAC setting (defined above) was equal to SNF, LTCH, or IRF. The denominator includes episodes where first PAC setting was equal to SNF, LTCH, IRF, or HHA.	Beneficiaries who: 1) have complete FFS enrollment history six months prior to anchor admission; 2) have non-missing age & gender data; 3) are alive at the time of anchor discharge; 4) maintain FFS A&B enrollment throughout the measurement period or until death; 5) have a measurement period that ends on or before December 31, 2016.
Payment	Medicare Part A Standardized Allowed Amount (various settings) (Models 2 & 3)	Average Medicare Part A standardized allowed amount, across various settings and totaled within the measurement period	90-day Post-anchor/ qualifying stay discharge	The sum of Medicare payment and beneficiary out-of-pocket amounts for Part A health care services provided during the anchor stay, readmissions, SNF, HHA, IRF, and LTCH. Payment in the lower/upper ends are winsorized.[2]	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to anchor/qualifying admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) have a measurement period that ends on or before December 31, 2016; 5) have non-missing Part A payments during the bundle and acute period.

[2] Medicare Part A acute payments are winsorized by quarter and by MS-DRG, at the 2nd and 98th percentiles. All other Medicare Part A payments are winsorized by quarter and EI type (Model 3) at the 1st and 99th percentiles.

Domain	Outcome Name	Definition/ Description	Measurement Period(s)	Technical Definition	Eligible Sample
Payment	Medicare Part B Standardized Allowed Amount (various service categories) (Models 2 & 3)	Average Medicare Part B standardized allowed amount, across various service categories and totaled within the measurement period	90-day Post-anchor/ qualifying stay discharge	The sum of Medicare payment and beneficiary out-of-pocket amounts for Part B outpatient therapy (speech, occupation, and physical therapy), imaging and lab services, procedures, physician evaluation & management services (E&M), all other non-institutional services, and other institutional services. Payment in the lower/upper ends are winsorized.[3]	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to anchor/qualifying admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) have a measurement period that ends on or before December 31, 2016; 5) have non-missing Part B payments during the bundle and acute period.
Payment	Medicare Part A and Part B included in the bundle definition (Models 2 & 3)	Average total Medicare Part A and Part B standardized allowed amount, included in the definition of the bundle	Bundle period	The sum of Medicare payment and beneficiary out-of-pocket amounts for all Part A and Part B services included in the bundle definition. Payment in the lower/upper ends are winsorized.[4]	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to anchor/qualifying admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) have a measurement period that ends on or before December 31, 2016; 5) have non-missing Part B payments during the bundle and acute period.
Payment	Medicare Part A and Part B not included in the bundle definition (Models 2 & 3)	Average total Medicare Part A and Part B standardized allowed amount, not included in the definition of the bundle	Bundle period	The sum of Medicare payment and beneficiary out-of-pocket amounts for all Part A and Part B services that are not included in the bundle definition. Payment in the lower/upper ends are winsorized.[5]	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to anchor/qualifying admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) have a measurement period that ends on or before December 31, 2016; 5) have non-missing Part B payments during the bundle and acute period.

[3] Medicare Part B payments are winsorized by quarter and EI type (Model 3 only) at the 1st and 99th percentiles.
[4] Total within bundle payments for Model 2 are winsorized by quarter and episode length; Model 3 payments are winsorized by quarter, EI type, and episode length. All within bundle payments are winsorized at the 1st and 99th percentiles.
[5] Total within bundle payments for Model 2 are winsorized by quarter and episode length; Model 3 payments are winsorized by quarter, EI type, and episode length. All within bundle payments are winsorized at the 1st and 99th percentiles.

Domain	Outcome Name	Definition/ Description	Measurement Period(s)	Technical Definition	Eligible Sample
Payment	Medicare Part B, pre-bundle period (Model 2)	Average total Medicare Part B standardized allowed amount	30 days prior to anchor stay admission	The sum of Medicare Part B payment and beneficiary out-of-pocket amounts for all health care services. Payments in the lower/upper ends are winsorized.[6]	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to anchor admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) have a measurement period that ends on or before December 31, 2016; 5) have non-missing Part B payments during the bundle and acute period.
Payment	Medicare Part A and B, pre-bundle period (Model 3)	Average total Medicare Part A and B standardized allowed amount	30 days prior to PAC admission	The sum of Medicare Part A and B payment and beneficiary out-of-pocket amounts for all health care services. Payments in the lower/upper ends are winsorized.[7]	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to qualifying admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) have a measurement period that ends on or before December 31, 2016; 5) have non-missing Part A and B payments during the bundle and acute period.
Payment	Medicare Part A and B Standardized Allowed Payment Amount (Models 2 and 3)	Average total Medicare Part A and B standardized allowed amount	Anchor/ qualifying stay + 90- post-discharge; Post-bundle days 1-30 and days 1-90	The sum of Medicare payment and beneficiary out-of-pocket amounts for all health care services. Payments in the lower/upper ends are winsorized.[8]	Beneficiaries who: 1) have a complete FFS enrollment history six months prior to anchor/qualifying admission; 2) have non-missing age & gender data; 3) maintain FFS A&B enrollment throughout the measurement period or until death; 4) have a measurement period that ends on or before December 31, 2016 for 90 day post discharge payment outcomes; March 31, 2017 for post bundle payment outcomes; 5) have non-missing Part A and B payments during the bundle and acute period.

[6] Medicare Part B pre-bundle payments are winsorized at the 1st and 99th percentiles by quarter.
[7] Medicare Part A and B pre-bundle payments are winsorized by quarter and EI type at the 1st and 99th percentiles.
[8] Acute payments are winsorized by quarter and by MS-DRG at the 2nd and 98th or 1st and 99th for Part A and B, respectively. All other payments in this category are winsorized by quarter, episode length, and EI type (Model 3 only) at the 1st and 99th percentiles.

Appendix G: Additional Variable Definitions

To identify whether there were changes in patient mix across strata, we analyzed a number of patient characteristics associated with higher resource use. **Exhibit G.1** presents the complete list of claim-based outcomes in our analysis, including the variable name, definition, and source. See **Appendix M** for definitions of patient characteristics from the Minimum Dataset (MDS) and Outcome and Assessment Information Set (OASIS) and additional details on how we categorized the Model 3 clinical episode strata.

We categorized strata into three broad groups: decline in patient resource intensity, increase in patient resource intensity, and no change. Our categorization was based on statistically significant relative changes in patient characteristics associated with higher resource use as well as the direction and average magnitude of the estimates. If a strata had three or more variables with negative DiD estimates that were statistically significant ($p<0.10$)[1] or if the average magnitude of the DiD estimates was -2 or below, it was considered to have a less resource intensive mix of patients. Because the count of HCC indicators is the only variable that is not expressed in percentage points, we adjusted the HCC DiD estimate when calculating the average magnitude across the eight DiD estimates for a given strata. The HCC adjustment factor is the ratio of the largest absolute value of the DiD estimates among all of the other patient characteristics to the largest absolute value DiD estimate for the average count of HCC indicators for all strata by Model and participant type. Each DiD estimate for the count of HCC indicators is multiplied by this adjustment factor. We indicated that there was an increase in patient resource intensity using the same decision rules applied to positive DiD estimates.

Exhibit G.2 below displays the crosswalk from HCC indicators to risk variable group HCCs used in the risk-adjustment regression models.

[1] We considered the "net" number of DiD estimates that were in the negative direction and statistically significant, meaning we subtracted the number of estimates that were in the positive direction and statistically significant. For example, a strata would be considered to have a less resource intensive patient mix if there were four DiD estimates that were negative and statistically significant and one estimate that was positive and statistically significant.

Exhibit G.1: Patient Characteristic Variable Definitions

Variable Name	Definition	Model(s)	Source
Eligible for Medicaid	Medicaid eligibility according to the Medicare Enrollment file	2, 3, 4	2010-2016 Medicare Enrollment Database (EDB)
Disabled	Percent of patients who are disabled (not including ESRD), based on Medicare eligibility status from the Medicare Enrollment file	2, 3, 4	2010-2016 EDB
Age	Percent of patients 80 years and above	2, 3, 4	2010-2016 EDB
Average count of HCC indicators	The average number of HCCs present during the six months prior to the anchor (Model 2) or qualifying (Model 3) inpatient stay	2, 3, 4	2010-2016 Medicare Claims
Utilization-Inpatient acute care hospitalization	Percent of patients with one or more inpatient acute care hospitalization during the six months prior to anchor (models 2 & 4) or qualifying (model 3) inpatient stay	2, 3, 4	2010-2016 Medicare Claims
Utilization- Emergency room without admission	Percent of patients with one or more instances of an emergency room visit without admission to the hospital during the six months prior to anchor (models 2 & 4) or qualifying (model 3) inpatient stay	2, 3, 4	2010-2016 Medicare Claims
Utilization- Home health use	Percent of patients with one or more instances of home health use during the six months prior to anchor (models 2 & 4) or qualifying (model 3) inpatient stay	2, 3, 4	2010-2016 Medicare Claims
Utilization- Institutional nursing facility	Percent of patients with any days in a nursing facility regardless of payer (Medicare, Medicaid, beneficiary) during the six months prior to the anchor (models 2 &4) or qualifying (model 3) stay.	2, 3, 4	2011-2016 Minimum Data Set (MDS)

Exhibit G.2: Crosswalk HCC Indicators to Risk Variable Group HCC (RV HCC)

Risk Variable Group Label	CMS-CCs	Description
rv1	**1, 5**	**Severe infection**
	1	HIV/AIDS
	5	Opportunistic infections
rv2	**111, 112**	**Other infectious disease & pneumonias**
	111	Aspiration and specified bacterial pneumonias
	112	Pneumococcal pneumonia, emphysema, lung abscess
rv3	**7**	**Metastatic cancer and acute leukemia**
rv4	**8, 9**	**Severe cancer**
	8	Lung, upper digestive tract, and other severe cancers
	9	Lymphatic, head and neck, brain, and other major cancers
rv6	**10**	**Breast, prostate, colorectal and other cancers and tumors**
rv9	**15-19, 119**	**Diabetes mellitus**
	15	Diabetes with renal or peripheral circulatory manifestation
	16	Diabetes with neurologic or other specified manifestation
	17	Diabetes with acute complications
	18	Diabetes with ophthalmologic or unspecified manifestation
	19	Diabetes without complication
	119	Proliferative diabetic retinopathy and vitreous hemorrhage
rv10	**21**	**Protein-calorie malnutrition**
rv11	**25, 26**	**End-Stage liver disease**
	25	End-Stage liver disease
	26	Cirrhosis of liver
rv12	**44**	**Severe hematological disorders**
rv14	**51, 52**	**Drug and alcohol disorders**
	51	Drug/alcohol psychosis
	52	Drug/alcohol dependence
rv15	**54, 55**	**Psychiatric comorbidity**
	54	Schizophrenia
	55	Major depressive, bipolar, and paranoid disorders
rv18	**67-69, 100, 101, 177**	**Hemiplegia, paraplegia, paralysis, functional disability**
	67	Quadriplegia, other extensive paralysis
	68	Paraplegia
	69	Spinal cord disorders/injuries
	100	Hemiplegia/hemiparesis
	101	Cerebral Palsy and other paralytic syndromes
	177	Amputation status, lower limb/amputation complications
rv19	**74**	**Seizure disorders and convulsions**
rv20	**80**	**Congestive Heart Failure**

Risk Variable Group Label	CMS-CCs	Description
rv21	**81-83, 104, 105**	**Coronary atherosclerosis or angina, cerebrovascular disease**
	81	Acute myocardial infarction
	82	Unstable angina and other acute ischemic heart disease
	83	Angina pectoris/old myocardial infarction
	104	Vascular disease with complications
	105	Vascular disease
rv24	**92**	**Specified heart arrhythmias**
rv26	**108**	**Chronic obstructive pulmonary disease**
rv29	**130**	**Dialysis status**
rv30	**148, 149**	**Ulcers**
	148	Decubitus skin ulcer
	149	Chronic skin ulcer, except decubitus
rv31	**2**	**Septicemia/shock**
rv34	**79**	**Cardio-respiratory failure and shock**
rv39	**131**	**Renal failure**
rv40	**32**	**Pancreatic disease**
rv41	**38**	**Rheumatoid arthritis and inflammatory connective tissue disease**
rv42	**77**	**Respirator dependence/tracheostomy status**
rv43	**174**	**Major organ transplant status**
rv45	**158**	**Hip fracture/dislocation**

RV to HCC mapping based on the Hospital-wide Readmission Measure, ***HWR Tech Report,*** July 2012; modified to reflect the 2013 CMS HCC Factors that were applied to our sample.

Appendix H: Model 2 ACH Beneficiary Survey Response Rates and Additional Results

Exhibit H.1: Response Rates for Model 2 ACH Beneficiary Survey Strata

Clinical Episode	BPCI Sample Size	Response Rate
Acute myocardial infarction	655	46.7%
Cardiac arrhythmia	929	52.0%
Cardiac valve	602	67.8%
Cellulitis	548	42.7%
Chronic obstructive pulmonary disorder, bronchitis, asthma	1,639	46.6%
Congestive heart failure	1,828	41.8%
Coronary artery bypass graft	721	68.1%
Esophagitis, gastroenteritis, and other digestive disorders	606	47.2%
Gastrointestinal hemorrhage	617	49.0%
Hip & femur procedure except major joint	854	44.9%
Major bowel procedure	417	60.0%
Major joint replacement of the lower extremity	323	73.5%
Major joint replacement of the upper extremity	1,793	73.4%
Medical noninfectious orthopedic	900	46.5%
Other respiratory	608	37.8%
Renal failure	790	38.1%
Sepsis	1,860	35.7%
Simple Pneumonia and respiratory infections	1,699	41.7%
Spinal fusion (non-cervical)	751	74.4%
Stroke	1,349	42.3%
Urinary tract infection	830	34.6%
Total	**20,319**	**46.4%**

Table H.2: Risk Adjusted Treatment Effect of BPCI on Measures of Functional Status, Overall Health, and Care Experience Model 2 - ACH - Pooled Across Strata

Domain	Outcome Measure	BPCI Sample Size	Comparison Sample Size	BPCI Rate	Comparison Rate	Difference in Rate	P-Value	% Difference
Functional Improvement	Improvement in bathing, dressing, using the toilet, or eating	19,029	19,203	72.2%	72.1%	0.1	0.837	0.2
	Improvement in planning regular tasks	19,309	19,508	60.2%	61.1%	-0.9	0.171	-1.4
	Improvement in use of mobility device (less likely to use mobility device)	19,313	19,495	49.4%	50.6%	-1.2	0.081	-2.3
	Improvement in walking without rest	19,116	19,322	45.7%	44.9%	0.8	0.259	1.8
	Improvement in using stairs	18,647	18,889	45.4%	44.9%	0.5	0.529	1.1
	Improvement (less frequent) in physical/emotional problems limiting social activities	19,064	19,256	60.3%	60.3%	0.0	0.987	0.0
	Improvement (less frequent) in pain limiting regular activities	19,168	19,327	59.9%	59.3%	0.7	0.334	1.1
Functional Decline	Decline in bathing, dressing, using the toilet, or eating	19,029	19,203	14.9%	15.4%	-0.5	0.243	-3.4
	Decline in planning regular tasks	19,309	19,508	23.2%	22.6%	0.6	0.240	2.6
	Decline in use of mobility device (more likely to use mobility device)	19,313	19,495	37.6%	36.3%	1.2	0.043	3.4
	Decline in walking without rest	19,116	19,322	27.5%	27.6%	-0.1	0.826	-0.4
	Decline in using stairs	18,647	18,889	30.7%	30.2%	0.5	0.400	1.6
	Decline (more frequent) in physical/emotional problems limiting social activities	19,064	19,256	21.4%	21.3%	0.1	0.793	0.7
	Decline (more frequent) in pain limiting regular activities	19,168	19,327	18.3%	18.8%	-0.5	0.304	-2.7
Overall Health	Q9/10 - Composite Depression Indicator (PHQ-2 score>=3)	19,180	19,420	20.8%	20.7%	0.1	0.897	0.4
	Q18 - In general, how would you rate your physical health? (Excellent/very good/good)	19,740	19,924	60.2%	59.7%	0.4	0.504	0.7
	Q19 - In general, how would you rate your mental health? (Excellent/very good/good)	19,732	19,928	80.2%	79.5%	0.6	0.214	0.8

Domain	Outcome Measure	BPCI Sample Size	Comparison Sample Size	BPCI Rate	Comparison Rate	Difference in Rate	P-Value	% Difference
Care Experience	Q20 - Conflicting advice from medical staff about your treatment (Never)	19,576	19,817	72.5%	73.9%	-1.4	0.037	-1.9
	Q21 - Services appropriate for the level of care you needed (Always)	19,678	19,874	62.2%	63.7%	-1.5	0.056	-2.3
	Q23 - Medical staff spoke in preferred language (Always)	19,853	20,062	93.2%	93.4%	-0.3	0.545	-0.3
	Q24 - Discharged at the right time (Yes)	19,586	19,793	88.6%	90.4%	-1.8	<0.001	-2.0
	Q25 - Medical staff took your preferences into account in deciding what health care services you should have after you left the hospital (Agree/strongly agree)	17,272	17,403	92.9%	93.5%	-0.6	0.132	-0.6
	Q27 - Good understanding of how to take care of self before going home (Agree/strongly agree)	17,248	17,424	94.5%	95.6%	-1.1	<0.001	-1.2
	Q28 - Medical staff clearly explained how to take medications before going home (Agree/strongly agree)	16,800	17,017	93.9%	94.6%	-0.7	0.058	-0.7
	Q29 - Medical staff clearly explained what follow-up appointments or treatments would be needed before going home (Agree/strongly agree)	16,669	16,827	94.3%	94.9%	-0.6	0.079	-0.7
	Q30 - Able to manage your health needs since returning home (Agree/strongly agree)	16,993	17,058	96.1%	96.0%	0.1	0.709	0.1
Overall Satisfaction	Q31 - Overall satisfaction with recovery since leaving hospital (Extremely satisfied/quite a bit satisfied)	18,679	18,920	70.2%	72.1%	-1.9	0.003	-2.6

Appendix I: Impact of BPCI on Allowed Payment, Quality, and Utilization Measures, by Clinical Episode, Baseline to Intervention, Model 2 ACH

The following exhibits display risk-adjusted difference-in-differences results for all payment, quality, and utilization measures assessed in the OY3 Annual Report. Results are presented by clinical episode. Please observe the following abbreviations, which are used throughout the appendix:

- DiD = difference-in-differences
- LCI = lower confidence interval at the 5% and 10% level
- UCI = upper confidence interval at the 5% and 10% level
- PDP = post-anchor hospitalization discharge period
- IP = inpatient hospitalizations
- PAC = post-acute care
- SNF = skilled nursing facility
- HHA = home health agency
- IRF = inpatient rehabilitation facility

Note that sample sizes reflect the number of episodes initiated during the intervention period that met inclusion criteria for the given outcome. Medicare payments are risk-adjusted and standardized to remove the effect of geographic differences in wages, extra amounts to account for teaching programs and other policy factors. Results reflect Lewin analysis of Medicare claims data for episodes that began Q4 2011 through Q3 2012 (baseline) and Q4 2013 through Q3 2016 (intervention period) for BPCI episode initiators and the matched comparison providers.

A. Additional Analyses on Model 2 Quality Outcomes

An important objective of the BPCI program is to ensure that quality of care is maintained or improved under the initiative. Recognizing that there are limitations to our methodology for estimating the impact of BPCI that may lead to statistically significant estimates that are not robust, we conducted sensitivity analyses when there was a statistically significant decline in quality associated with BPCI. As described in the methods section within the main body of the report, the DiD is based on a one-to-one episode match between BPCI and comparison providers - we do not include all comparison provider episodes. We therefore conducted sensitivity analyses where we selected 1,000 random samples of episodes from comparison providers and compared the DiD results across the random samples. If the large majority of DiDs were positive and statistically significant, we concluded that the result was robust. If the large majority of DiDs were not statistically significant, we concluded that the result was sensitive to the comparison group of episodes included and the estimate was not robust.

In the following exhibits, there are six quality outcomes with a DiD that was positive and statistically significant at the 0.10 level. These results suggest that BPCI participants had a decrease in quality of care relative to the comparison group. The clinical episode/outcomes are:

- 30- post discharge mortality for emergent CABG episodes;
- 30- and 90-day post discharge ED use for emergent CABG episodes;
- 30- and 90-post discharge readmission rate for PCI episodes; and
- 30-day post discharge readmission rate for renal failure episodes.

We found that over 98% of the samples yielded a positive DiD, which validates the direction of the DiD estimate for the six outcomes listed above. However, the proportion of estimates that were statistically significant was not nearly that high, which puts the statistical significance of these estimates in question. Less than 50% of the DiD estimates were statistically significant for CABG 30- and 90-day emergency department use and renal failure 30-day readmission rates. While we did find that 90% of the PCI samples yielded a statistically significant increase in readmission rates, BPCI and comparison provider readmission rates were not on parallel trends during the baseline period, so these estimates may be biased.

The estimated increase in mortality for emergent CABG episodes was statistically significant in over 75% of the random samples, which suggests the DiD was robust across comparison groups, but the estimate could still be sensitive to other components of our methodology. The 30-day post-discharge mortality rate among emergent CABG episodes is both low and volatile. It fluctuated between 0 and 2% across the three year period prior to BPCI. Therefore, we conducted additional sensitivity tests using various baseline period definitions. This analysis revealed the estimate was quite sensitive to different baseline periods. The magnitude of the

DiD decreased from 1.1 (p=0.01) to 0.5 (NS) after including all potential comparison episodes and expanding the baseline from one year to three years (Q4 2010 to Q4 2013). We concluded from these analysis that the volatility of the mortality rate during the time period prior to the implementation of BPCI caused the statistically significant increase in mortality and that there was no correlation between BPCI and mortality for emergent CABG episodes.

Exhibit I.1: Emergent Coronary Artery Bypass Graft, Model 2 ACH, 30-day post discharge mortality rate, Q4 2011 – Q4 2016

Intervention time period	Sample	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate	
		BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	p-value
Intervention period: Q4 2013 through Q3 2016 (basis for this annual report)	One-to-one episode matching, Original baseline (one-year), Q4 2011 – Q3 2012	1,724	1,727	0.8%	1.5%	1.0%	0.8%	0.9	0.045
Intervention period: Q4 2013 through Q4 2016 (the latest data available when conducting the sensitivity analysis)	One-to-one episode matching, Original baseline (one-year), Q4 2011 – Q3 2012	1,921	1,920	0.8%	1.6%	1.0%	0.7%	1.1	0.012
	All BPCI and comparison episodes (multiplied) from matched providers, Three-year baseline, Q4 2010 – Q3 2013	2,355	17,506	1.1%	1.5%	1.1%	1.0%	0.5	0.184*

*p-value does not account for duplicate comparison episodes from comparison providers that match to more than one BPCI participant.

B. Impact of BPCI on Allowed Payment, Quality, and Utilization Measures, by Clinical Episode, Baseline to Intervention, Model 2 ACH

Exhibit I.2: Major Joint Replacement of the Upper Extremity Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,329	1,324	$23,336	$24,549	$23,654	$24,574	$294	-$1,376	$1,963	-$1,107	$1,695
Total allowed payment amount, IP through 120-day PDP	1,271	1,259	$24,909	$26,175	$25,399	$26,032	$633	-$1,272	$2,537	-$965	$2,231
Total amount included in the bundle definition, 90-day episodes	1,287	1,282	$23,121	$23,847	$23,122	$24,347	-$498	-$2,035	$1,039	-$1,788	$792
Total amount not included the bundle, 90-day episodes	1,287	1,282	$361	$440	$441	$359	$160	-$143	$464	-$95	$415
Allowed payment amount for Part B services, 30 days pre-bundle	1,329	1,324	$1,130	$1,013	$1,002	$1,025	-$140	-$302	$22	-$276	-$4
Total allowed payment amount, 30 days post-bundle	1,319	1,307	$1,553	$1,616	$1,708	$1,619	$151	-$369	$672	-$286	$588
Total allowed payment amount, 90 days post-bundle	1,258	1,246	$4,605	$4,423	$5,490	$4,638	$669	-$750	$2,088	-$522	$1,860
Inpatient anchor stay standardized allowed amount	1,335	1,337	$12,116	$13,923	$12,252	$13,959	$100	-$94	$294	-$62	$263
Readmissions standardized allowed amount, 90-day PDP	1,335	1,337	$609	$855	$1,211	$941	$516	$41	$991	$117	$914
SNF standardized allowed amount, 90-day PDP	1,335	1,337	$3,538	$2,832	$3,706	$3,116	-$116	-$1,261	$1,029	-$1,077	$845
HHA standardized allowed amount, 90-day PDP	1,335	1,337	$1,389	$1,415	$1,362	$1,352	$36	-$281	$352	-$230	$301
Therapy standardized allowed amount, 90-day PDP	1,329	1,324	$1,104	$1,008	$793	$793	-$95	-$253	$63	-$227	$38
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,329	1,324	$292	$267	$301	$294	-$19	-$69	$32	-$61	$24
Procedures standardized allowed amount, 90-day PDP	1,329	1,324	$358	$359	$320	$336	-$16	-$99	$67	-$86	$54
Evaluation and management standardized allowed amount, 90-day PDP	1,329	1,324	$522	$550	$540	$543	$25	-$89	$140	-$71	$121

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	1,329	1,324	$357	$386	$335	$355	$9	-$179	$198	-$149	$167
Other non-institutional services standardized allowed amount, 90-day PDP	1,329	1,324	$220	$222	$218	$224	-$4	-$113	$106	-$96	$88
Anchor inpatient length of stay	1,337	1,337	3.3	2.8	3.3	2.9	-0.1	-0.4	0.2	-0.3	0.1
Number of institutional PAC days, 90-day PDP[1]	287	286	29.5	26.2	28.8	27.2	-1.7	-7.5	4.0	-6.5	3.1
Number of SNF days, 90-day PDP[1]	270	266	29.6	26.7	29.3	27.8	-1.5	-7.5	4.5	-6.5	3.5
Number of HHA visits, 90-day PDP[1]	589	483	14.0	12.9	15.6	13.8	0.8	-1.8	3.4	-1.4	3.0
Patients discharged to PAC	1,337	1,337	49.4%	48.3%	47.6%	44.9%	1.6	-5.8	9.1	-4.6	7.9
Patients discharged to institutional PAC (of those who received PAC)	682	563	50.4%	43.0%	54.1%	45.3%	1.5	-10.0	13.0	-8.2	11.1
Emergency department use, 30-day PDP	1,337	1,337	7.2%	7.5%	6.8%	7.5%	-0.5	-3.5	2.6	-3.0	2.1
Emergency department use, 90-day PDP	1,335	1,337	14.3%	12.9%	12.1%	13.6%	-2.9	-6.7	1.0	-6.1	0.4
Unplanned readmission rate, 30-day PDP	1,337	1,337	4.1%	3.1%	4.5%	3.8%	-0.3	-2.7	2.2	-2.3	1.8
Unplanned readmission rate, 90-day PDP	1,335	1,337	7.0%	6.1%	8.3%	7.8%	-0.3	-3.1	2.4	-2.6	2.0

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.3: Urinary Tract Infection Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	7,854	7,850	$22,084	$21,856	$22,125	$22,757	-$860*	-$1,655	-$64	-$1,527	-$192
Total allowed payment amount, IP through 120-day PDP	7,409	7,445	$25,063	$24,960	$25,042	$25,980	-$1,042*	-$2,011	-$73	-$1,855	-$229
Total amount included in the bundle definition, 90-day episodes	7,753	7,750	$21,205	$20,841	$21,157	$21,701	-$908	-$1,692	-$125	-$1,566	-$251
Total amount not included the bundle, 90-day episodes	7,753	7,750	$954	$1,101	$986	$1,118	$15	-$151	$180	-$124	$153
Allowed payment amount for Part B services, 30 days pre-bundle	7,855	7,851	$1,531	$1,592	$1,483	$1,611	-$67	-$143	$9	-$131	-$4
Total allowed payment amount, 30 days post-bundle	6,911	6,978	$3,451	$3,392	$3,335	$3,521	-$244	-$572	$84	-$520	$31
Total allowed payment amount, 90 days post-bundle	6,517	6,568	$9,769	$9,878	$9,815	$10,362	-$438	-$1,197	$321	-$1,075	$199
Inpatient anchor stay standardized allowed amount	7,971	7,980	$5,087	$5,004	$5,086	$4,995	$8	-$17	$33	-$13	$29
Readmissions standardized allowed amount, 90-day PDP	7,970	7,980	$3,316	$3,219	$3,334	$3,224	$13	-$324	$349	-$270	$295
SNF standardized allowed amount, 90-day PDP	7,970	7,980	$6,587	$6,275	$6,404	$7,009	-$917	-$1,503	-$332	-$1,408	-$426
HHA standardized allowed amount, 90-day PDP	7,970	7,980	$1,279	$1,520	$1,382	$1,509	$114	$14	$215	$30	$199
IRF standardized allowed amount, 90-day PDP	7,970	7,980	$758	$854	$697	$784	$9	-$197	$216	-$164	$183
Therapy standardized allowed amount, 90-day PDP	7,854	7,850	$209	$185	$190	$191	-$24	-$61	$12	-$55	$7
Imaging and laboratory services standardized allowed amount, 90-day PDP	7,854	7,850	$358	$354	$365	$343	$17	-$5	$39	-$1	$36
Procedures standardized allowed amount, 90-day PDP	7,854	7,850	$259	$251	$248	$242	-$3	-$33	$27	-$28	$22
Evaluation and management standardized allowed amount, 90-day PDP	7,854	7,850	$1,305	$1,318	$1,329	$1,390	-$48	-$124	$27	-$112	$15
Other institutional services standardized allowed amount, 90-day PDP	7,854	7,850	$472	$650	$516	$680	$14	-$64	$91	-$51	$78

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	7,854	7,850	$550	$520	$563	$552	-$19	-$60	$22	-$53	$15
Anchor inpatient length of stay	8,010	8,010	4.7	4.5	4.7	4.4	0.0	-0.2	0.1	-0.1	0.1
Number of institutional PAC days, 90-day PDP[1]	3,307	3,153	36.5	31.9	35.5	34.5	-3.7	-5.6	-1.7	-5.3	-2.1
Number of SNF days, 90-day PDP[1]	3,055	2,897	37.6	32.7	36.3	35.4	-3.9	-5.9	-1.9	-5.6	-2.3
Number of HHA visits, 90-day PDP[1]	3,608	3,400	16.6	16.8	17.0	16.8	0.4	-0.6	1.4	-0.4	1.2
Patients discharged to PAC	8,009	8,008	57.5%	58.4%	56.8%	56.9%	0.7	-1.6	3.1	-1.3	2.7
Patients discharged to institutional PAC (of those who received PAC)	4,799	4,548	60.4%	58.3%	58.1%	58.1%	-2.1	-5.4	1.1	-4.8	0.6
Emergency department use, 30-day PDP	7,970	7,980	11.5%	12.3%	10.7%	12.4%	-0.8	-2.2	0.6	-2.0	0.4
Emergency department use, 90-day PDP	7,930	7,950	22.2%	24.9%	22.9%	24.9%	0.7	-1.3	2.7	-0.9	2.3
Unplanned readmission rate, 30-day PDP	7,970	7,980	14.5%	12.5%	14.6%	12.6%	0.0	-1.6	1.7	-1.3	1.4
Unplanned readmission rate, 90-day PDP	7,930	7,950	26.6%	25.6%	27.0%	25.6%	0.4	-1.8	2.5	-1.4	2.2
All-cause mortality rate, 30-day PDP	7,865	7,863	6.0%	4.9%	5.4%	4.3%	-0.1*	-1.2	1.0	-1.0	0.8
All-cause mortality rate, 90-day PDP	7,825	7,835	12.4%	10.8%	11.4%	10.1%	-0.3*	-1.8	1.2	-1.6	0.9
All-cause mortality rate, 120-day PDP	7,383	7,427	14.7%	12.9%	13.6%	12.5%	-0.8	-2.4	0.8	-2.1	0.5

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.4: Stroke Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	11,208	11,161	$31,077	$31,255	$31,440	$31,914	-$297	-$1,296	$703	-$1,136	$543
Total allowed payment amount, IP through 120-day PDP	10,640	10,596	$33,829	$34,096	$34,196	$34,746	-$283	-$1,482	$916	-$1,290	$723
Total amount included in the bundle definition, 90-day episodes	10,715	10,663	$30,159	$30,154	$30,634	$31,095	-$466	-$1,462	$530	-$1,302	$369
Total amount not included the bundle, 90-day episodes	10,715	10,663	$734	$844	$768	$783	$96*	-$16	$208	$2	$190
Allowed payment amount for Part B services, 30 days pre-bundle	11,219	11,163	$1,496	$1,881	$1,441	$1,867	-$41	-$205	$123	-$179	$97
Total allowed payment amount, 30 days post-bundle	9,356	9,334	$3,502	$3,437	$3,488	$3,408	$15	-$270	$300	-$224	$254
Total allowed payment amount, 90 days post-bundle	8,831	8,794	$9,479	$9,317	$9,262	$9,146	-$47	-$740	$647	-$629	$535
Inpatient anchor stay standardized allowed amount	11,291	11,291	$7,568	$7,295	$7,563	$7,349	-$59	-$144	$26	-$131	$13
Readmissions standardized allowed amount, 90-day PDP	11,282	11,291	$2,883	$2,707	$2,779	$2,628	-$25	-$303	$252	-$258	$208
SNF standardized allowed amount, 90-day PDP	11,282	11,291	$7,836	$7,902	$7,912	$7,879	$99	-$510	$708	-$412	$610
HHA standardized allowed amount, 90-day PDP	11,282	11,291	$1,460	$1,616	$1,480	$1,580	$55	-$50	$160	-$33	$143
IRF standardized allowed amount, 90-day PDP	11,282	11,291	$5,493	$5,656	$5,836	$6,363	-$364	-$889	$162	-$805	$77
LTCH standardized allowed amount, 90-day PDP	11,282	11,291	$434	$341	$462	$380	-$12	-$221	$197	-$187	$163
Therapy standardized allowed amount, 90-day PDP	11,210	11,162	$322	$282	$308	$282	-$13	-$52	$25	-$46	$19
Imaging and laboratory services standardized allowed amount, 90-day PDP	11,210	11,162	$394	$391	$390	$395	-$8	-$33	$17	-$29	$13
Procedures standardized allowed amount, 90-day PDP	11,210	11,162	$212	$190	$211	$189	$0	-$23	$23	-$19	$20

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Evaluation and management standardized allowed amount, 90-day PDP	11,210	11,162	$1,526	$1,535	$1,501	$1,540	-$30	-$108	$49	-$95	$36
Other institutional services standardized allowed amount, 90-day PDP	11,210	11,162	$392	$574	$400	$578	$5	-$64	$73	-$53	$62
Other non-institutional services standardized allowed amount, 90-day PDP	11,210	11,162	$423	$417	$407	$407	-$6	-$40	$28	-$35	$23
Anchor inpatient length of stay	11,357	11,357	5.3	4.9	5.2	4.9	-0.1	-0.2	0.1	-0.2	0.1
Number of institutional PAC days, 90-day PDP[1]	6,181	6,009	36.9	34.9	37.2	35.2	0.0	-1.6	1.6	-1.4	1.3
Number of SNF days, 90-day PDP[1]	4,257	3,841	41.3	39.0	42.5	41.1	-0.8	-2.8	1.1	-2.4	0.8
Number of HHA visits, 90-day PDP[1]	4,594	4,418	16.2	16.7	16.7	16.4	0.8	-0.1	1.6	0.1	1.5
Patients discharged to PAC	11,345	11,342	66.0%	64.5%	66.6%	64.9%	0.3	-1.8	2.4	-1.5	2.1
Patients discharged to institutional PAC (of those who received PAC)	7,461	7,300	77.8%	77.7%	77.8%	78.9%	-1.1	-3.2	1.1	-2.9	0.7
Emergency department use, 30-day PDP	11,281	11,285	9.9%	10.7%	9.3%	10.0%	0.1*	-1.2	1.5	-1.0	1.3
Emergency department use, 90-day PDP	11,210	11,220	20.4%	21.5%	19.3%	20.5%	-0.1	-1.8	1.6	-1.5	1.3
Unplanned readmission rate, 30-day PDP	11,281	11,285	12.3%	11.2%	12.0%	11.1%	-0.1	-1.5	1.2	-1.3	1.0
Unplanned readmission rate, 90-day PDP	11,210	11,220	22.2%	20.3%	21.2%	19.9%	-0.7	-2.5	1.0	-2.2	0.7
All-cause mortality rate, 30-day PDP	11,233	11,221	11.6%	11.0%	11.7%	10.8%	0.2	-1.1	1.5	-0.9	1.3
All-cause mortality rate, 90-day PDP	11,162	11,156	16.8%	15.5%	16.8%	15.4%	0.1	-1.4	1.6	-1.2	1.3
All-cause mortality rate, 120-day PDP	10,598	10,587	18.6%	17.1%	18.6%	17.2%	-0.1	-1.6	1.4	-1.4	1.2

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, mortality, and total payments not included in the bundle outcomes.

Exhibit I.5: Chronic Obstructive Pulmonary Disease, Bronchitis, and Asthma Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	17,964	17,987	$18,416	$18,556	$18,216	$18,753	-$395	-$906	$115	-$824	$33
Total allowed payment amount, IP through 120-day PDP	17,327	17,317	$21,306	$21,506	$21,226	$21,825	-$400	-$1,008	$208	-$910	$111
Total amount included in the bundle definition, 30-day episodes	601	601	$10,580	$11,677	$10,477	$11,945	-$371	-$1,241	$498	-$1,101	$358
Total amount not included the bundle, 30-day episodes	601	601	$307	$287	$168	$383	-$235	-$509	$38	-$465	-$6
Total amount included in the bundle definition, 90-day episodes	17,375	17,387	$17,617	$17,619	$17,486	$17,874	-$386	-$868	$97	-$791	$20
Total amount not included the bundle, 90-day episodes	17,375	17,387	$785	$960	$755	$877	$53	-$55	$161	-$37	$143
Allowed payment amount for Part B services, 30 days pre-bundle	17,976	17,988	$1,278	$1,421	$1,208	$1,348	$3	-$50	$55	-$42	$47
Total allowed payment amount, 30 days post-bundle	16,469	16,660	$3,222	$3,217	$3,275	$3,286	-$16	-$238	$207	-$202	$171
Total allowed payment amount, 90 days post-bundle	15,846	16,010	$9,820	$9,552	$9,638	$9,619	-$249	-$731	$232	-$653	$155
Inpatient anchor stay standardized allowed amount	18,279	18,284	$5,311	$5,445	$5,308	$5,445	-$3	-$15	$9	-$13	$7
Readmissions standardized allowed amount, 90-day PDP	18,269	18,284	$3,990	$4,090	$3,931	$4,001	$30	-$208	$268	-$170	$230
SNF standardized allowed amount, 90-day PDP	18,269	18,284	$2,566	$2,495	$2,606	$2,707	-$171	-$386	$45	-$352	$10
HHA standardized allowed amount, 90-day PDP	18,269	18,284	$1,101	$1,208	$1,095	$1,096	$105	$44	$166	$54	$157
IRF standardized allowed amount, 90-day PDP	18,269	18,284	$425	$430	$370	$476	-$102	-$206	$2	-$189	-$14
LTCH standardized allowed amount, 90-day PDP	18,269	18,284	$631	$334	$520	$367	-$145	-$317	$28	-$289	$0
Therapy standardized allowed amount, 90-day PDP	17,966	17,987	$73	$68	$81	$73	$3	-$10	$17	-$8	$14

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Imaging and laboratory services standardized allowed amount, 90-day PDP	17,966	17,987	$430	$432	$423	$437	-$12	-$28	$5	-$26	$3
Procedures standardized allowed amount, 90-day PDP	17,966	17,987	$237	$238	$233	$238	-$3	-$23	$16	-$20	$13
Evaluation and management standardized allowed amount, 90-day PDP	17,966	17,987	$1,364	$1,384	$1,324	$1,384	-$41	-$93	$12	-$85	$3
Other institutional services standardized allowed amount, 90-day PDP	17,966	17,987	$602	$806	$606	$847	-$37	-$101	$27	-$91	$17
Other non-institutional services standardized allowed amount, 90-day PDP	17,966	17,987	$455	$465	$454	$478	-$15	-$50	$20	-$44	$14
Anchor inpatient length of stay	18,331	18,331	4.6	4.4	4.7	4.5	0.0	-0.1	0.2	-0.1	0.1
Number of institutional PAC days, 90-day PDP[1]	4,106	3,532	29.7	25.9	29.8	27.6	-1.6	-3.1	0.0	-2.9	-0.3
Number of SNF days, 90-day PDP[1]	3,674	3,058	30.3	26.5	31.2	29.0	-1.5	-3.2	0.2	-2.9	-0.1
Number of HHA visits, 90-day PDP[1]	7,497	6,612	15.2	15.1	15.2	14.5	0.7	0.1	1.4	0.2	1.3
Patients discharged to PAC	18,328	18,327	39.0%	40.1%	38.9%	38.4%	1.6	0.1	3.2	0.3	2.9
Patients discharged to institutional PAC (of those who received PAC)	7,754	6,710	36.6%	35.2%	36.7%	37.3%	-1.9	-4.5	0.6	-4.1	0.2
Emergency department use, 30-day PDP	18,097	18,114	11.5%	12.6%	11.4%	12.7%	-0.2	-1.2	0.7	-1.1	0.6
Emergency department use, 90-day PDP	18,037	18,067	24.0%	26.0%	24.1%	26.4%	-0.3	-1.6	1.0	-1.4	0.8
Unplanned readmission rate, 30-day PDP	18,097	18,114	16.7%	15.9%	16.6%	15.1%	0.7	-0.4	1.8	-0.3	1.6
Unplanned readmission rate, 90-day PDP	18,037	18,067	31.8%	31.2%	31.9%	30.9%	0.5	-0.9	1.8	-0.7	1.6
All-cause mortality rate, 30-day PDP	17,991	18,022	3.5%	2.9%	3.4%	2.7%	0.1	-0.4	0.7	-0.3	0.6
All-cause mortality rate, 90-day PDP	17,931	17,975	8.1%	6.8%	7.8%	6.5%	0.0	-0.8	0.9	-0.7	0.7
All-cause mortality rate, 120-day PDP	17,298	17,309	9.9%	8.5%	9.6%	8.2%	0.0	-0.9	0.9	-0.8	0.7

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.6: Coronary Artery Bypass Graft Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	3,180	3,184	$47,156	$48,514	$47,214	$49,143	-$571	-$2,648	$1,507	-$2,314	$1,173
Total allowed payment amount, IP through 120-day PDP	3,047	3,067	$48,944	$50,569	$49,041	$51,039	-$372	-$2,597	$1,853	-$2,240	$1,495
Total amount included in the bundle definition, 30-day episodes	627	625	$40,647	$43,466	$41,320	$42,836	$1,303	-$3,438	$6,044	-$2,677	$5,282
Total amount not included the bundle, 30-day episodes	627	625	$143	$108	$120	$262	-$177	-$376	$22	-$344	-$10
Total amount included in the bundle definition, 90-day episodes	2,557	2,560	$45,577	$46,478	$45,625	$47,618	-$1,092	-$2,444	$260	-$2,227	$43
Total amount not included the bundle, 90-day episodes	2,557	2,560	$619	$735	$498	$570	$44	-$210	$297	-$169	$256
Allowed payment amount for Part B services, 30 days pre-bundle	3,184	3,185	$2,278	$2,474	$2,229	$2,331	$94	-$96	$283	-$65	$253
Total allowed payment amount, 30 days post-bundle	3,100	3,110	$2,060	$2,322	$2,030	$2,165	$126	-$325	$577	-$253	$505
Total allowed payment amount, 90 days post-bundle	2,969	2,989	$5,575	$6,259	$5,577	$5,707	$554	-$415	$1,523	-$259	$1,368
Inpatient anchor stay standardized allowed amount	3,206	3,210	$28,539	$29,857	$29,024	$29,974	$368	-$610	$1,345	-$453	$1,188
Readmissions standardized allowed amount, 90-day PDP	3,202	3,210	$2,728	$2,852	$2,560	$2,604	$81	-$514	$676	-$418	$580
SNF standardized allowed amount, 90-day PDP	3,202	3,210	$3,052	$2,967	$2,731	$3,205	-$559	-$1,170	$52	-$1,072	-$46
HHA standardized allowed amount, 90-day PDP	3,202	3,210	$1,760	$1,848	$1,816	$1,896	$9	-$156	$173	-$129	$147
IRF standardized allowed amount, 90-day PDP	3,202	3,210	$1,429	$1,292	$1,558	$2,110	-$689	-$1,248	-$129	-$1,159	-$219
Therapy standardized allowed amount, 90-day PDP	3,180	3,185	$36	$34	$35	$43	-$11	-$31	$10	-$28	$7
Imaging and laboratory services standardized allowed amount, 90-day PDP	3,180	3,185	$446	$454	$481	$467	$22	-$22	$66	-$15	$59

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	3,180	3,185	$252	$253	$262	$235	$28	-$23	$78	-$15	$70
Evaluation and management standardized allowed amount, 90-day PDP	3,180	3,185	$1,166	$1,186	$1,141	$1,195	-$34	-$168	$100	-$146	$79
Other institutional services standardized allowed amount, 90-day PDP	3,180	3,185	$1,033	$1,456	$964	$1,272	$116	-$61	$292	-$32	$264
Other non-institutional services standardized allowed amount, 90-day PDP	3,180	3,185	$235	$285	$282	$301	$31	-$33	$94	-$22	$84
Anchor inpatient length of stay	3,242	3,242	9.5	9.2	9.3	9.1	0.0	-0.4	0.4	-0.4	0.3
Number of institutional PAC days, 90-day PDP[1]	1,114	1,154	22.1	20.6	20.5	19.5	-0.4	-3.1	2.2	-2.6	1.8
Number of SNF days, 90-day PDP[1]	882	823	23.7	21.9	21.8	21.1	-1.1	-4.1	1.8	-3.6	1.3
Number of HHA visits, 90-day PDP[1]	2,270	2,220	10.9	11.2	11.4	11.0	0.7	-0.1	1.5	0.1	1.4
Patients discharged to PAC	3,242	3,240	79.2%	77.8%	79.2%	80.4%	-2.7	-7.8	2.4	-6.9	1.6
Patients discharged to institutional PAC (of those who received PAC)	2,584	2,559	40.2%	38.0%	42.4%	46.2%	-6.0	-11.2	-0.8	-10.3	-1.6
Emergency department use, 30-day PDP	3,241	3,236	10.3%	12.5%	13.1%	13.6%	1.6	-1.4	4.6	-0.9	4.1
Emergency department use, 90-day PDP	3,201	3,205	19.6%	22.2%	22.5%	23.5%	1.7	-1.8	5.1	-1.3	4.6
Unplanned readmission rate, 30-day PDP	3,241	3,236	13.6%	12.2%	13.7%	12.0%	0.3	-2.7	3.2	-2.2	2.7
Unplanned readmission rate, 90-day PDP	3,201	3,205	19.8%	18.0%	20.1%	18.4%	0.0	-3.2	3.1	-2.7	2.6
All-cause mortality rate, 30-day PDP	3,236	3,236	0.7%	1.2%	0.9%	0.7%	0.7	0.1	1.4	0.2	1.3
All-cause mortality rate, 90-day PDP	3,196	3,205	1.8%	2.2%	1.9%	1.6%	0.7	-0.2	1.6	-0.1	1.5
All-cause mortality rate, 120-day PDP	3,062	3,088	2.1%	2.6%	2.3%	1.9%	0.8	-0.2	1.9	-0.1	1.7

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.7: Coronary Artery Bypass Graft, Emergent Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,698	1,693	$51,717	$54,382	$52,504	$54,080	$1,089	-$1,608	$3,785	-$1,174	$3,352
Total allowed payment amount, IP through 120-day PDP	1,625	1,635	$53,322	$56,547	$54,365	$56,055	$1,535	-$1,405	$4,474	-$932	$4,002
Total amount included in the bundle definition, 30-day episodes	395	394	$43,851	$47,727	$44,568	$46,626	$1,817	-$3,242	$6,876	-$2,429	$6,063
Total amount included in the bundle definition, 90-day episodes	1,306	1,299	$50,756	$52,403	$50,774	$52,408	$13	-$1,919	$1,946	-$1,609	$1,635
Total amount not included the bundle, 90-day episodes	1,306	1,299	$558	$689	$584	$620	$95	-$302	$491	-$238	$427
Allowed payment amount for Part B services, 30 days pre-bundle	1,701	1,693	$1,439	$1,768	$1,416	$1,575	$171	-$18	$361	$12	$330
Total allowed payment amount, 30 days post-bundle	1,649	1,653	$1,855	$2,403	$2,071	$2,298	$320	-$245	$885	-$154	$794
Total allowed payment amount, 90 days post-bundle	1,581	1,594	$5,081	$6,513	$6,030	$6,091	$1,370	-$20	$2,760	$204	$2,537
Inpatient anchor stay standardized allowed amount	1,710	1,711	$31,984	$34,217	$32,713	$33,926	$1,020	-$298	$2,338	-$86	$2,126
Readmissions standardized allowed amount, 90-day PDP	1,707	1,711	$2,771	$2,939	$2,872	$2,731	$309	-$513	$1,131	-$381	$999
SNF standardized allowed amount, 90-day PDP	1,707	1,711	$3,646	$3,318	$3,204	$3,534	-$657	-$1,479	$164	-$1,347	$32
HHA standardized allowed amount, 90-day PDP	1,707	1,711	$1,819	$1,906	$1,896	$1,948	$35	-$148	$218	-$119	$188
IRF standardized allowed amount, 90-day PDP	1,707	1,711	$1,536	$1,361	$1,907	$2,319	-$587	-$1,288	$113	-$1,175	$0
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,698	1,693	$436	$458	$485	$453	$54	-$8	$116	$2	$106
Procedures standardized allowed amount, 90-day PDP	1,698	1,693	$235	$237	$273	$222	$53	-$17	$124	-$6	$113
Evaluation and management standardized allowed amount, 90-day PDP	1,698	1,693	$1,206	$1,267	$1,209	$1,221	$50	-$119	$220	-$92	$193

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	1,698	1,693	$928	$1,458	$954	$1,260	$224	$10	$437	$44	$403
Other non-institutional services standardized allowed amount, 90-day PDP	1,698	1,693	$262	$311	$299	$302	$46	-$37	$129	-$24	$115
Anchor inpatient length of stay	1,730	1,730	10.8	10.7	10.7	10.3	0.4	-0.1	0.9	0.0	0.8
Number of institutional PAC days, 90-day PDP[1]	650	656	23.0	21.0	21.0	19.8	-0.8	-4.2	2.5	-3.7	2.0
Number of SNF days, 90-day PDP[1]	514	472	25.3	22.0	22.7	21.6	-2.2	-6.2	1.8	-5.6	1.2
Number of HHA visits, 90-day PDP[1]	1,226	1,209	11.1	11.4	11.8	11.2	0.9	0.0	1.8	0.1	1.7
Patients discharged to PAC	1,730	1,729	80.6%	79.3%	81.2%	82.8%	-3.0	-8.0	2.1	-7.2	1.3
Patients discharged to institutional PAC (of those who received PAC)	1,410	1,405	42.9%	40.8%	46.7%	48.3%	-3.7	-8.9	1.5	-8.1	0.7
Emergency department use, 30-day PDP	1,729	1,727	9.8%	13.4%	14.4%	14.2%	3.7	0.2	7.2	0.8	6.7
Emergency department use, 90-day PDP	1,706	1,708	19.6%	23.8%	25.1%	23.8%	5.5	0.9	10.0	1.6	9.3
Unplanned readmission rate, 30-day PDP	1,729	1,727	15.1%	13.0%	15.0%	12.0%	0.8	-2.9	4.6	-2.3	4.0
Unplanned readmission rate, 90-day PDP	1,706	1,708	22.2%	19.2%	21.1%	18.2%	-0.1	-4.5	4.4	-3.8	3.6
All-cause mortality rate, 30-day PDP	1,724	1,727	0.8%	1.5%	1.0%	0.8%	0.9	0.0	1.8	0.2	1.6
All-cause mortality rate, 90-day PDP	1,701	1,708	1.8%	2.6%	2.0%	1.8%	0.9	-0.2	2.1	0.0	1.9
All-cause mortality rate, 120-day PDP	1,628	1,650	2.2%	2.8%	2.4%	2.2%	0.8*	-0.6	2.2	-0.4	1.9

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.8: Coronary Artery Bypass Graft, Non-emergent Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,482	1,491	$42,120	$41,733	$41,258	$43,427	-$2,555	-$4,723	-$387	-$4,375	-$735
Total allowed payment amount, IP through 120-day PDP	1,422	1,432	$44,088	$43,624	$43,079	$45,244	-$2,628	-$5,030	-$226	-$4,644	-$612
Total amount included in the bundle definition, 30-day episodes	232	231	$36,273	$36,699	$35,556	$35,540	$442	-$3,824	$4,708	-$3,138	$4,022
Total amount included in the bundle definition, 90-day episodes	1,251	1,261	$40,272	$40,317	$40,212	$42,535	-$2,279	-$3,991	-$566	-$3,716	-$841
Total amount not included the bundle, 90-day episodes	1,251	1,261	$702	$781	$408	$516	-$28	-$361	$305	-$308	$251
Allowed payment amount for Part B services, 30 days pre-bundle	1,483	1,492	$3,238	$3,277	$3,169	$3,194	$14	-$284	$313	-$236	$265
Total allowed payment amount, 30 days post-bundle	1,451	1,457	$2,252	$2,215	$2,015	$2,032	-$54	-$763	$655	-$649	$541
Total allowed payment amount, 90 days post-bundle	1,388	1,395	$6,027	$5,903	$5,184	$5,327	-$267	-$1,843	$1,310	-$1,590	$1,056
Inpatient anchor stay standardized allowed amount	1,496	1,499	$24,680	$24,829	$24,858	$25,421	-$415	-$1,205	$376	-$1,078	$249
Readmissions standardized allowed amount, 90-day PDP	1,495	1,499	$2,653	$2,700	$2,293	$2,474	-$135	-$1,000	$730	-$861	$591
SNF standardized allowed amount, 90-day PDP	1,495	1,499	$2,396	$2,594	$2,159	$2,773	-$417	-$1,109	$275	-$998	$164
HHA standardized allowed amount, 90-day PDP	1,495	1,499	$1,691	$1,775	$1,720	$1,842	-$38	-$243	$167	-$210	$134
IRF standardized allowed amount, 90-day PDP	1,495	1,499	$1,300	$1,199	$1,215	$1,875	-$761	-$1,412	-$111	-$1,307	-$215
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,482	1,492	$457	$451	$477	$482	-$11	-$76	$54	-$65	$44
Procedures standardized allowed amount, 90-day PDP	1,482	1,492	$275	$266	$248	$256	-$18	-$93	$57	-$81	$45
Evaluation and management standardized allowed amount, 90-day PDP	1,482	1,492	$1,124	$1,092	$1,064	$1,163	-$131	-$297	$36	-$270	$9

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	1,482	1,492	$1,148	$1,450	$976	$1,294	-$17	-$254	$221	-$216	$183
Other non-institutional services standardized allowed amount, 90-day PDP	1,482	1,492	$212	$260	$256	$294	$11	-$68	$89	-$55	$77
Anchor inpatient length of stay	1,512	1,512	8.0	7.7	7.8	7.8	-0.4	-0.8	0.1	-0.7	0.0
Number of institutional PAC days, 90-day PDP1	464	498	20.9	20.2	19.7	19.0	0.0	-3.3	3.3	-2.8	2.8
Number of SNF days, 90-day PDP1	368	351	21.6	21.7	20.3	20.3	0.1	-3.2	3.4	-2.7	2.9
Number of HHA visits, 90-day PDP1	1,044	1,011	10.6	10.9	11.0	10.8	0.5	-0.6	1.6	-0.4	1.4
Patients discharged to PAC	1,512	1,511	77.4%	75.7%	76.8%	77.8%	-2.7	-9.3	3.9	-8.2	2.8
Patients discharged to institutional PAC (of those who received PAC)	1,174	1,154	37.0%	34.7%	37.2%	43.6%	-8.6	-16.0	-1.3	-14.8	-2.5
Emergency department use, 30-day PDP	1,512	1,509	10.9%	11.5%	11.5%	13.0%	-0.8	-4.8	3.1	-4.2	2.5
Emergency department use, 90-day PDP	1,495	1,497	19.7%	20.4%	19.5%	22.9%	-2.7	-7.5	2.1	-6.7	1.3
Unplanned readmission rate, 30-day PDP	1,512	1,509	12.1%	11.2%	12.1%	11.7%	-0.5	-4.2	3.2	-3.6	2.6
Unplanned readmission rate, 90-day PDP	1,495	1,497	17.4%	16.7%	18.9%	18.3%	0.0	-4.2	4.1	-3.5	3.4
All-cause mortality rate, 30-day PDP	1,512	1,509	0.5%	0.8%	0.8%	0.5%	0.6	-0.3	1.6	-0.2	1.4
All-cause mortality rate, 90-day PDP	1,495	1,497	1.6%	1.5%	1.8%	1.3%	0.3	-1.1	1.8	-0.9	1.6
All-cause mortality rate, 120-day PDP	1,434	1,438	1.8%	2.3%	2.0%	1.6%	0.9	-0.7	2.4	-0.5	2.2

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.9: Major Joint Replacement of the Lower Extremity Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	97,217	97,216	$27,553	$26,099	$27,064	$26,831	-$1,222	-$1,554	-$889	-$1,501	-$943
Total allowed payment amount, IP through 120-day PDP	92,631	92,623	$28,883	$27,501	$28,387	$28,227	-$1,222*	-$1,575	-$870	-$1,518	-$926
Total amount included in the bundle definition, 30-day episodes	13,445	13,413	$23,032	$21,382	$22,500	$22,290	-$1,440	-$2,163	-$717	-$2,047	-$833
Total amount not included the bundle, 30-day episodes	13,445	13,413	$88	$68	$76	$80	-$24	-$69	$21	-$62	$14
Total amount included in the bundle definition, 60-day episodes	1,181	1,180	$24,251	$21,983	$25,147	$25,200	-$2,321	-$4,089	-$553	-$3,805	-$837
Total amount not included the bundle, 60-day episodes	1,181	1,180	$152	$156	$37	$161	-$120	-$223	-$18	-$207	-$34
Total amount included in the bundle definition, 90-day episodes	82,685	82,652	$27,256	$25,930	$26,855	$26,644	-$1,115	-$1,453	-$778	-$1,399	-$832
Total amount not included the bundle, 90-day episodes	82,685	82,652	$316	$331	$313	$329	-$2	-$32	$28	-$27	$23
Allowed payment amount for Part B services, 30 days pre-bundle	97,311	97,245	$868	$868	$873	$887	-$14	-$39	$11	-$35	$7
Total allowed payment amount, 30 days post-bundle	95,104	95,095	$1,526	$1,522	$1,480	$1,536	-$60	-$128	$8	-$117	-$3
Total allowed payment amount, 90 days post-bundle	91,040	91,019	$4,236	$4,219	$4,085	$4,252	-$185	-$346	-$24	-$320	-$50
Inpatient anchor stay standardized allowed amount	97,773	97,728	$12,010	$12,184	$12,004	$12,218	-$40	-$98	$18	-$89	$8
Readmissions standardized allowed amount, 90-day PDP	97,679	97,728	$1,227	$1,222	$1,108	$1,164	-$59	-$131	$12	-$119	$1
SNF standardized allowed amount, 90-day PDP	97,679	97,728	$5,455	$4,352	$5,343	$5,002	-$762	-$1,030	-$493	-$987	-$537
HHA standardized allowed amount, 90-day PDP	97,679	97,728	$2,184	$2,225	$2,276	$2,256	$61	-$48	$170	-$30	$153
IRF standardized allowed amount, 90-day PDP	97,679	97,728	$1,609	$1,052	$1,432	$1,245	-$370	-$559	-$180	-$529	-$210

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
LTCH standardized allowed amount, 90-day PDP	97,679	97,728	$112	$76	$94	$79	-$22	-$55	$10	-$49	$5
Therapy standardized allowed amount, 90-day PDP	97,219	97,218	$724	$698	$712	$675	$11	-$17	$38	-$12	$34
Imaging and laboratory services standardized allowed amount, 90-day PDP	97,219	97,218	$285	$264	$283	$260	$2	-$6	$10	-$5	$9
Procedures standardized allowed amount, 90-day PDP	97,219	97,218	$263	$275	$244	$256	$0	-$11	$10	-$9	$9
Evaluation and management standardized allowed amount, 90-day PDP	97,219	97,218	$755	$696	$700	$697	-$56	-$80	-$32	-$76	-$36
Other institutional services standardized allowed amount, 90-day PDP	97,219	97,218	$295	$374	$293	$370	$2	-$22	$25	-$18	$21
Other non-institutional services standardized allowed amount, 90-day PDP	97,219	97,218	$238	$245	$245	$249	$3	-$10	$15	-$8	$13
Anchor inpatient length of stay	97,922	97,922	4.4	3.8	4.4	3.9	-0.1	-0.2	0.0	-0.2	0.0
Number of institutional PAC days, 90-day PDP[1]	39,826	43,190	22.6	20.8	22.3	22.0	-1.4	-1.9	-0.9	-1.9	-1.0
Number of SNF days, 90-day PDP[1]	34,556	37,634	24.2	21.6	23.7	23.2	-2.0	-2.6	-1.4	-2.5	-1.5
Number of HHA visits, 90-day PDP[1]	65,847	66,301	12.3	12.0	12.2	11.8	0.1	-0.2	0.5	-0.2	0.4
Patients discharged to PAC	97,914	97,916	86.7%	80.0%	89.3%	85.6%	-3.0	-5.7	-0.2	-5.3	-0.7
Patients discharged to institutional PAC (of those who received PAC)	79,652	82,557	61.6%	48.9%	59.6%	52.4%	-5.6	-8.0	-3.2	-7.6	-3.6
Emergency department use, 30-day PDP	97,889	97,890	7.5%	8.1%	7.6%	8.1%	0.0	-0.5	0.5	-0.4	0.4
Emergency department use, 90-day PDP	97,649	97,699	13.6%	14.4%	13.7%	14.5%	0.0	-0.6	0.5	-0.5	0.4
Unplanned readmission rate, 30-day PDP	97,889	97,890	6.1%	5.5%	5.9%	5.2%	-0.1	-0.4	0.3	-0.4	0.3
Unplanned readmission rate, 90-day PDP	97,649	97,699	9.9%	9.0%	9.3%	8.9%	-0.5	-0.9	0.0	-0.8	-0.1
All-cause mortality rate, 30-day PDP	97,603	97,655	0.9%	0.8%	0.8%	0.8%	-0.1	-0.2	0.1	-0.2	0.0
All-cause mortality rate, 90-day PDP	97,368	97,467	1.9%	1.8%	1.8%	1.8%	-0.1	-0.3	0.1	-0.2	0.1
All-cause mortality rate, 120-day PDP	92,758	92,859	2.3%	2.1%	2.2%	2.2%	-0.2	-0.4	0.1	-0.3	0.0

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.10: Major Joint Replacement of the Lower Extremity, Fracture Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	12,730	12,732	$44,626	$43,972	$43,395	$44,763	-$2,021	-$2,806	-$1,237	-$2,680	-$1,363
Total allowed payment amount, IP through 120-day PDP	12,181	12,141	$47,353	$46,509	$45,906	$47,334	-$2,272	-$3,186	-$1,358	-$3,039	-$1,505
Total amount included in the bundle definition, 30-day episodes	1,611	1,609	$32,148	$32,232	$32,008	$33,386	-$1,295	-$2,476	-$113	-$2,286	-$303
Total amount not included the bundle, 30-day episodes	1,611	1,609	$191	$152	$170	$214	-$83	-$224	$58	-$201	$36
Total amount included in the bundle definition, 60-day episodes	163	163	$38,735	$35,981	$40,513	$41,591	-$3,831	-$8,108	$446	-$7,421	-$241
Total amount included in the bundle definition, 90-day episodes	10,976	10,973	$43,817	$43,492	$42,944	$44,346	-$1,728	-$2,512	-$944	-$2,386	-$1,070
Total amount not included the bundle, 90-day episodes	10,976	10,973	$583	$584	$544	$559	-$15	-$126	$97	-$108	$79
Allowed payment amount for Part B services, 30 days pre-bundle	12,750	12,745	$1,322	$1,439	$1,288	$1,404	$1	-$57	$59	-$48	$50
Total allowed payment amount, 30 days post-bundle	11,408	11,399	$3,716	$3,446	$3,368	$3,481	-$383	-$653	-$114	-$609	-$157
Total allowed payment amount, 90 days post-bundle	10,967	10,946	$9,777	$9,076	$8,810	$9,104	-$995	-$1,638	-$352	-$1,534	-$455
Inpatient anchor stay standardized allowed amount	12,783	12,766	$13,142	$13,371	$13,172	$13,422	-$21	-$82	$39	-$72	$29
Readmissions standardized allowed amount, 90-day PDP	12,763	12,766	$3,163	$3,002	$2,846	$2,975	-$290	-$572	-$7	-$527	-$53
SNF standardized allowed amount, 90-day PDP	12,763	12,766	$15,135	$14,653	$14,847	$15,721	-$1,356	-$2,009	-$704	-$1,904	-$809
HHA standardized allowed amount, 90-day PDP	12,763	12,766	$2,116	$2,265	$2,051	$2,110	$90	-$5	$184	$10	$169
IRF standardized allowed amount, 90-day PDP	12,763	12,766	$4,201	$3,854	$3,836	$3,811	-$322	-$806	$162	-$728	$84
LTCH standardized allowed amount, 90-day PDP	12,763	12,766	$435	$271	$393	$275	-$46	-$223	$131	-$195	$102
Therapy standardized allowed amount, 90-day PDP	12,730	12,732	$264	$275	$286	$271	$26	-$4	$57	$0	$52

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Imaging and laboratory services standardized allowed amount, 90-day PDP	12,730	12,732	$313	$287	$298	$280	-$8	-$24	$9	-$22	$6
Procedures standardized allowed amount, 90-day PDP	12,730	12,732	$269	$273	$237	$258	-$17	-$43	$9	-$39	$5
Evaluation and management standardized allowed amount, 90-day PDP	12,730	12,732	$1,569	$1,559	$1,433	$1,476	-$53	-$117	$11	-$107	$1
Other institutional services standardized allowed amount, 90-day PDP	12,730	12,732	$388	$483	$374	$488	-$19	-$74	$36	-$65	$27
Other non-institutional services standardized allowed amount, 90-day PDP	12,730	12,732	$529	$511	$525	$524	-$16	-$51	$19	-$46	$13
Anchor inpatient length of stay	12,844	12,844	6.1	5.8	6.3	5.9	0.0	-0.1	0.1	-0.1	0.1
Number of institutional PAC days, 90-day PDP[1]	11,406	11,361	36.4	32.8	36.1	35.0	-2.5	-3.6	-1.4	-3.4	-1.6
Number of SNF days, 90-day PDP[1]	9,624	9,458	39.8	35.2	39.5	38.1	-3.2	-4.4	-2.1	-4.2	-2.2
Number of HHA visits, 90-day PDP[1]	7,670	7,393	15.7	15.7	15.5	15.3	0.1	-0.4	0.6	-0.3	0.6
Patients discharged to PAC	12,841	12,842	94.7%	95.1%	94.2%	94.8%	-0.2	-1.2	0.8	-1.0	0.6
Patients discharged to institutional PAC (of those who received PAC)	12,225	12,170	94.1%	92.6%	93.8%	93.4%	-1.1	-2.1	0.0	-2.0	-0.1
Emergency department use, 30-day PDP	12,837	12,836	8.6%	9.8%	8.8%	9.1%	1.0*	-0.2	2.2	0.0	2.0
Emergency department use, 90-day PDP	12,757	12,758	18.3%	20.0%	18.8%	19.4%	1.1	-0.5	2.6	-0.2	2.4
Unplanned readmission rate, 30-day PDP	12,837	12,836	13.8%	12.1%	13.0%	12.2%	-0.8	-2.1	0.5	-1.9	0.3
Unplanned readmission rate, 90-day PDP	12,757	12,758	23.4%	20.9%	21.6%	21.2%	-2.1	-3.7	-0.5	-3.5	-0.8
All-cause mortality rate, 30-day PDP	12,609	12,612	5.0%	4.9%	4.9%	5.0%	-0.2	-1.0	0.7	-0.9	0.6
All-cause mortality rate, 90-day PDP	12,534	12,537	11.1%	10.7%	11.0%	10.8%	-0.3	-1.5	1.0	-1.3	0.8
All-cause mortality rate, 120-day PDP	11,989	11,956	13.1%	12.6%	12.9%	12.8%	-0.5	-1.8	0.8	-1.6	0.6

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.11: Major Joint Replacement of the Lower Extremity, Non-fracture Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	84,487	84,484	$24,840	$23,234	$24,458	$23,915	-$1,063	-$1,389	-$737	-$1,337	-$790
Total allowed payment amount, IP through 120-day PDP	80,450	80,482	$25,929	$24,441	$25,576	$25,108	-$1,020*	-$1,361	-$679	-$1,306	-$734
Total amount included in the bundle definition, 30-day episodes	11,834	11,804	$21,681	$19,829	$21,120	$20,604	-$1,336	-$2,057	-$614	-$1,942	-$730
Total amount not included the bundle, 30-day episodes	11,834	11,804	$73	$58	$63	$57	-$9	-$52	$34	-$45	$27
Total amount included in the bundle definition, 60-day episodes	1,018	1,017	$21,812	$19,588	$22,625	$22,289	-$1,888	-$3,713	-$63	-$3,420	-$356
Total amount not included the bundle, 60-day episodes	1,018	1,017	$113	$138	$37	$114	-$53	-$151	$45	-$135	$30
Total amount included in the bundle definition, 90-day episodes	71,709	71,679	$24,591	$23,062	$24,270	$23,750	-$1,009	-$1,343	-$676	-$1,289	-$729
Total amount not included the bundle, 90-day episodes	71,709	71,679	$273	$291	$273	$292	-$1	-$31	$29	-$26	$24
Allowed payment amount for Part B services, 30 days pre-bundle	84,561	84,500	$796	$779	$803	$803	-$18	-$44	$8	-$40	$4
Total allowed payment amount, 30 days post-bundle	83,696	83,696	$1,208	$1,244	$1,207	$1,248	-$5	-$67	$58	-$57	$48
Total allowed payment amount, 90 days post-bundle	80,073	80,073	$3,421	$3,514	$3,397	$3,531	-$42	-$186	$102	-$162	$79
Inpatient anchor stay standardized allowed amount	84,990	84,962	$11,831	$11,993	$11,817	$12,024	-$44	-$110	$22	-$99	$11
Readmissions standardized allowed amount, 90-day PDP	84,916	84,962	$919	$938	$830	$871	-$22	-$89	$45	-$78	$34
SNF standardized allowed amount, 90-day PDP	84,916	84,962	$3,883	$2,811	$3,816	$3,355	-$611	-$863	-$358	-$823	-$399
HHA standardized allowed amount, 90-day PDP	84,916	84,962	$2,198	$2,223	$2,307	$2,275	$57	-$63	$177	-$43	$157
IRF standardized allowed amount, 90-day PDP	84,916	84,962	$1,197	$644	$1,030	$827	-$350	-$524	-$176	-$496	-$204

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
LTCH standardized allowed amount, 90-day PDP	84,916	84,962	$62	$45	$45	$45	-$16	-$41	$8	-$37	$4
Therapy standardized allowed amount, 90-day PDP	84,489	84,486	$798	$765	$779	$741	$5	-$26	$35	-$21	$31
Imaging and laboratory services standardized allowed amount, 90-day PDP	84,489	84,486	$281	$261	$280	$257	$3	-$6	$12	-$4	$10
Procedures standardized allowed amount, 90-day PDP	84,489	84,486	$262	$276	$245	$257	$2	-$9	$13	-$7	$11
Evaluation and management standardized allowed amount, 90-day PDP	84,489	84,486	$626	$562	$583	$568	-$49	-$72	-$26	-$68	-$30
Other institutional services standardized allowed amount, 90-day PDP	84,489	84,486	$278	$356	$280	$353	$5	-$19	$29	-$15	$25
Other non-institutional services standardized allowed amount, 90-day PDP	84,489	84,486	$190	$204	$198	$205	$7	-$6	$19	-$4	$17
Anchor inpatient length of stay	85,078	85,078	4.1	3.5	4.1	3.6	-0.1	-0.2	0.0	-0.2	-0.1
Number of institutional PAC days, 90-day PDP[1]	28,420	31,829	17.6	16.5	17.4	17.3	-1.0	-1.5	-0.5	-1.4	-0.6
Number of SNF days, 90-day PDP[1]	24,932	28,176	18.8	16.9	18.3	18.0	-1.6	-2.2	-1.0	-2.1	-1.1
Number of HHA visits, 90-day PDP[1]	58,177	58,908	11.8	11.5	11.7	11.3	0.1	-0.3	0.5	-0.2	0.4
Patients discharged to PAC	85,073	85,074	85.5%	77.6%	88.5%	84.1%	-3.5	-6.6	-0.3	-6.1	-0.8
Patients discharged to institutional PAC (of those who received PAC)	67,427	70,387	55.8%	40.8%	53.3%	44.8%	-6.4	-9.2	-3.7	-8.8	-4.1
Emergency department use, 30-day PDP	85,052	85,054	7.3%	7.8%	7.4%	8.0%	-0.1	-0.6	0.4	-0.5	0.3
Emergency department use, 90-day PDP	84,892	84,941	12.8%	13.5%	12.9%	13.7%	-0.2	-0.8	0.4	-0.7	0.3
Unplanned readmission rate, 30-day PDP	85,052	85,054	4.9%	4.4%	4.7%	4.1%	0.1	-0.3	0.5	-0.2	0.4
Unplanned readmission rate, 90-day PDP	84,892	84,941	7.7%	7.2%	7.3%	6.9%	-0.1	-0.6	0.3	-0.5	0.2
All-cause mortality rate, 30-day PDP	84,994	85,043	0.2%	0.2%	0.2%	0.2%	0.0	-0.1	0.0	-0.1	0.0
All-cause mortality rate, 90-day PDP	84,834	84,930	0.4%	0.4%	0.4%	0.4%	0.0	-0.1	0.1	-0.1	0.1
All-cause mortality rate, 120-day PDP	80,769	80,903	0.6%	0.5%	0.5%	0.5%	-0.1	-0.2	0.0	-0.2	0.0

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.12: Percutaneous Coronary Intervention Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	4,633	4,653	$23,944	$26,921	$23,916	$26,663	$230*	-$724	$1,183	-$570	$1,030
Total allowed payment amount, IP through 120-day PDP	4,401	4,425	$26,129	$29,681	$25,849	$28,970	$432*	-$645	$1,509	-$472	$1,336
Total amount included in the bundle definition, 90-day episodes	4,633	4,653	$23,428	$25,898	$23,319	$25,804	-$15	-$931	$902	-$784	$754
Total amount not included the bundle, 90-day episodes	4,633	4,653	$592	$950	$598	$814	$143	-$33	$319	-$5	$290
Allowed payment amount for Part B services, 30 days pre-bundle	4,633	4,653	$1,674	$1,955	$1,631	$1,905	$7	-$208	$222	-$173	$187
Total allowed payment amount, 30 days post-bundle	4,398	4,448	$2,188	$2,652	$1,940	$2,377	$28	-$282	$337	-$232	$287
Total allowed payment amount, 90 days post-bundle	4,172	4,216	$6,563	$7,363	$5,953	$6,743	$10	-$779	$798	-$652	$671
Inpatient anchor stay standardized allowed amount	4,736	4,736	$12,724	$14,201	$12,717	$14,451	-$256	-$605	$92	-$549	$36
Readmissions standardized allowed amount, 90-day PDP	4,736	4,736	$3,057	$3,758	$3,373	$3,377	$697	$164	$1,229	$250	$1,143
SNF standardized allowed amount, 90-day PDP	4,736	4,736	$1,216	$1,457	$1,137	$1,354	$25	-$277	$326	-$228	$278
HHA standardized allowed amount, 90-day PDP	4,736	4,736	$634	$691	$554	$609	$2	-$94	$98	-$79	$83
Therapy standardized allowed amount, 90-day PDP	4,633	4,653	$34	$50	$49	$45	$21	$4	$37	$7	$34
Imaging and laboratory services standardized allowed amount, 90-day PDP	4,633	4,653	$518	$521	$505	$522	-$15	-$60	$30	-$53	$23
Procedures standardized allowed amount, 90-day PDP	4,633	4,653	$393	$377	$398	$349	$32	-$20	$83	-$12	$75
Evaluation and management standardized allowed amount, 90-day PDP	4,633	4,653	$1,041	$1,176	$1,037	$1,104	$67	-$11	$145	$2	$133
Other institutional services standardized allowed amount, 90-day PDP	4,633	4,653	$1,148	$1,483	$1,107	$1,626	-$185	-$367	-$2	-$338	-$32

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	4,633	4,653	$262	$362	$263	$310	$52	$5	$98	$13	$91
Anchor inpatient length of stay	4,745	4,745	4.0	4.0	4.0	4.1	-0.1	-0.3	0.1	-0.3	0.1
Number of institutional PAC days, 90-day PDP[1]	570	520	27.7	26.2	28.3	26.8	0.0	-3.8	3.8	-3.2	3.2
Number of SNF days, 90-day PDP[1]	478	419	29.3	28.0	29.9	28.3	0.3	-3.7	4.4	-3.1	3.7
Number of HHA visits, 90-day PDP[1]	1,064	976	14.7	14.6	14.4	13.9	0.4	-0.9	1.7	-0.7	1.5
Patients discharged to PAC	4,743	4,743	21.6%	22.2%	18.9%	20.4%	-0.9	-3.6	1.8	-3.1	1.4
Patients discharged to institutional PAC (of those who received PAC)	1,066	982	38.9%	38.5%	36.0%	37.0%	-1.3	-8.9	6.2	-7.7	5.0
Emergency department use, 30-day PDP	4,727	4,729	10.5%	13.4%	11.6%	13.7%	0.9	-0.9	2.6	-0.6	2.3
Emergency department use, 90-day PDP	4,718	4,720	19.8%	23.4%	21.4%	24.1%	0.8	-1.8	3.4	-1.4	3.0
Unplanned readmission rate, 30-day PDP	4,727	4,729	10.9%	12.9%	11.3%	10.9%	2.3*	0.4	4.3	0.7	4.0
Unplanned readmission rate, 90-day PDP	4,718	4,720	18.6%	21.7%	19.3%	19.9%	2.5*	0.3	4.8	0.6	4.4
All-cause mortality rate, 30-day PDP	4,716	4,726	1.6%	1.8%	1.5%	1.7%	0.0	-0.8	0.7	-0.6	0.6
All-cause mortality rate, 90-day PDP	4,707	4,717	3.1%	3.8%	3.0%	3.7%	0.0	-1.2	1.1	-1.0	0.9
All-cause mortality rate, 120-day PDP	4,474	4,485	3.9%	4.7%	3.6%	4.4%	0.1	-1.1	1.2	-0.9	1.0

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.13: Congestive Heart Failure Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	31,498	31,466	$24,000	$24,239	$23,465	$24,104	-$400	-$909	$110	-$827	$28
Total allowed payment amount, IP through 120-day PDP	30,135	30,096	$27,395	$27,784	$26,720	$27,639	-$531	-$1,126	$64	-$1,030	-$32
Total amount included in the bundle definition, 30-day episodes	3,147	3,137	$15,115	$14,927	$15,066	$15,126	-$249	-$1,044	$547	-$916	$419
Total amount not included the bundle, 30-day episodes	3,147	3,137	$236	$198	$276	$291	-$53	-$172	$67	-$153	$48
Total amount included in the bundle definition, 90-day episodes	28,207	28,156	$23,371	$23,453	$22,975	$23,487	-$429	-$933	$75	-$852	-$6
Total amount not included the bundle, 90-day episodes	28,207	28,156	$713	$865	$680	$808	$24	-$54	$103	-$41	$90
Allowed payment amount for Part B services, 30 days pre-bundle	31,540	31,477	$1,626	$1,753	$1,545	$1,638	$34	-$18	$87	-$10	$78
Total allowed payment amount, 30 days post-bundle	26,040	26,249	$4,337	$4,370	$4,048	$4,267	-$186	-$406	$35	-$371	$0
Total allowed payment amount, 90 days post-bundle	24,962	25,126	$12,375	$12,350	$11,927	$12,342	-$440	-$962	$81	-$878	-$3
Inpatient anchor stay standardized allowed amount	31,734	31,717	$6,502	$6,478	$6,512	$6,481	$7	-$21	$35	-$17	$30
Readmissions standardized allowed amount, 90-day PDP	31,692	31,717	$5,479	$5,414	$5,260	$5,414	-$218	-$465	$28	-$425	-$12
SNF standardized allowed amount, 90-day PDP	31,692	31,717	$4,093	$4,025	$3,836	$4,071	-$302	-$551	-$53	-$511	-$93
HHA standardized allowed amount, 90-day PDP	31,692	31,717	$1,425	$1,530	$1,379	$1,434	$51	-$18	$120	-$7	$109
IRF standardized allowed amount, 90-day PDP	31,692	31,717	$505	$515	$460	$556	-$85	-$180	$10	-$165	-$6
LTCH standardized allowed amount, 90-day PDP	31,692	31,717	$444	$365	$490	$366	$45	-$71	$161	-$52	$142
Therapy standardized allowed amount, 90-day PDP	31,498	31,466	$97	$83	$94	$90	-$11	-$23	$2	-$21	$0

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Imaging and laboratory services standardized allowed amount, 90-day PDP	31,498	31,466	$431	$432	$429	$430	$1	-$13	$15	-$11	$12
Procedures standardized allowed amount, 90-day PDP	31,498	31,466	$312	$304	$319	$300	$11	-$6	$29	-$3	$26
Evaluation and management standardized allowed amount, 90-day PDP	31,498	31,466	$1,588	$1,640	$1,549	$1,598	$3	-$49	$55	-$41	$47
Other institutional services standardized allowed amount, 90-day PDP	31,498	31,466	$699	$994	$737	$1,011	$21	-$43	$86	-$33	$76
Other non-institutional services standardized allowed amount, 90-day PDP	31,498	31,466	$489	$495	$486	$496	-$4	-$30	$22	-$26	$18
Anchor inpatient length of stay	31,858	31,858	5.2	5.0	5.3	5.1	0.0	-0.1	0.1	-0.1	0.1
Number of institutional PAC days, 90-day PDP[1]	9,895	8,931	30.2	27.8	30.2	29.2	-1.4	-2.6	-0.2	-2.4	-0.4
Number of SNF days, 90-day PDP[1]	9,073	8,067	30.8	28.2	30.8	29.9	-1.6	-2.8	-0.4	-2.6	-0.6
Number of HHA visits, 90-day PDP[1]	15,524	14,498	15.7	16.1	16.1	15.7	0.8	0.3	1.3	0.4	1.3
Patients discharged to PAC	31,816	31,826	53.8%	54.2%	52.7%	52.3%	0.7	-1.0	2.4	-0.7	2.2
Patients discharged to institutional PAC (of those who received PAC)	17,699	16,286	42.9%	42.0%	42.2%	41.7%	-0.4	-2.2	1.4	-2.0	1.1
Emergency department use, 30-day PDP	31,572	31,631	10.8%	11.8%	10.4%	11.7%	-0.2	-1.0	0.5	-0.9	0.4
Emergency department use, 90-day PDP	31,410	31,492	22.1%	23.7%	21.1%	23.6%	-0.9	-1.9	0.1	-1.7	0.0
Unplanned readmission rate, 30-day PDP	31,572	31,631	20.1%	19.0%	20.1%	18.7%	0.2*	-0.7	1.2	-0.6	1.1
Unplanned readmission rate, 90-day PDP	31,410	31,492	37.0%	36.2%	37.2%	36.2%	0.2	-1.0	1.4	-0.8	1.2
All-cause mortality rate, 30-day PDP	31,146	31,376	8.7%	8.4%	8.9%	8.1%	0.4	-0.3	1.1	-0.2	1.0
All-cause mortality rate, 90-day PDP	30,988	31,238	17.8%	16.9%	18.0%	16.9%	0.1	-0.9	1.1	-0.7	1.0
All-cause mortality rate, 120-day PDP	29,655	29,876	21.2%	20.0%	21.0%	20.1%	-0.3	-1.4	0.7	-1.2	0.5

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.14: Acute Myocardial Infarction Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	5,276	5,270	$25,856	$25,973	$25,514	$25,912	-$281	-$1,419	$856	-$1,236	$673
Total allowed payment amount, IP through 120-day PDP	5,055	5,045	$28,263	$28,649	$28,112	$28,707	-$209	-$1,444	$1,025	-$1,245	$827
Total amount included in the bundle definition, 90-day episodes	5,097	5,092	$25,181	$25,389	$25,073	$25,427	-$145	-$1,248	$958	-$1,071	$780
Total amount not included the bundle, 90-day episodes	5,097	5,092	$728	$688	$682	$647	-$5	-$177	$168	-$150	$140
Allowed payment amount for Part B services, 30 days pre-bundle	5,277	5,272	$1,531	$1,811	$1,487	$1,714	$52	-$99	$203	-$75	$179
Total allowed payment amount, 30 days post-bundle	4,400	4,425	$3,017	$3,045	$3,216	$3,319	-$75	-$496	$345	-$428	$277
Total allowed payment amount, 90 days post-bundle	4,201	4,243	$8,720	$9,282	$9,105	$9,397	$270	-$727	$1,267	-$567	$1,106
Inpatient anchor stay standardized allowed amount	5,316	5,319	$9,371	$9,048	$9,084	$8,972	-$211	-$550	$128	-$495	$74
Readmissions standardized allowed amount, 90-day PDP	5,315	5,319	$4,782	$4,904	$4,952	$5,085	-$11	-$613	$592	-$517	$495
SNF standardized allowed amount, 90-day PDP	5,315	5,319	$3,755	$3,741	$3,774	$3,826	-$66	-$543	$410	-$466	$334
HHA standardized allowed amount, 90-day PDP	5,315	5,319	$1,082	$1,156	$1,063	$1,092	$45	-$53	$142	-$37	$127
IRF standardized allowed amount, 90-day PDP	5,315	5,319	$441	$591	$522	$517	$156	-$21	$333	$7	$305
Therapy standardized allowed amount, 90-day PDP	5,276	5,270	$70	$68	$71	$77	-$9	-$32	$15	-$29	$11
Imaging and laboratory services standardized allowed amount, 90-day PDP	5,276	5,270	$410	$420	$418	$425	$3	-$32	$38	-$26	$33
Procedures standardized allowed amount, 90-day PDP	5,276	5,270	$364	$359	$386	$361	$20	-$32	$71	-$23	$63
Evaluation and management standardized allowed amount, 90-day PDP	5,276	5,270	$1,358	$1,366	$1,330	$1,366	-$28	-$120	$64	-$105	$49

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	5,276	5,270	$703	$1,068	$742	$1,027	$79	-$56	$214	-$35	$192
Other non-institutional services standardized allowed amount, 90-day PDP	5,276	5,270	$420	$450	$444	$461	$13	-$36	$62	-$28	$54
Anchor inpatient length of stay	5,337	5,337	5.4	5.0	5.4	5.0	-0.1	-0.3	0.1	-0.3	0.1
Number of institutional PAC days, 90-day PDP[1]	1,585	1,410	29.8	27.2	30.5	28.2	-0.3	-2.8	2.2	-2.4	1.8
Number of SNF days, 90-day PDP[1]	1,429	1,258	30.4	27.9	31.4	29.3	-0.4	-3.1	2.2	-2.7	1.8
Number of HHA visits, 90-day PDP[1]	1,986	1,868	15.1	14.9	15.0	14.7	0.1	-1.0	1.2	-0.8	1.0
Patients discharged to PAC	5,310	5,299	44.8%	43.8%	43.5%	42.9%	-0.4	-3.1	2.2	-2.7	1.8
Patients discharged to institutional PAC (of those who received PAC)	2,406	2,179	53.8%	52.0%	52.5%	52.0%	-1.4	-5.5	2.7	-4.8	2.1
Emergency department use, 30-day PDP	5,239	5,237	11.0%	12.9%	11.4%	13.7%	-0.3	-2.2	1.6	-1.9	1.3
Emergency department use, 90-day PDP	5,219	5,220	21.5%	23.8%	21.5%	24.4%	-0.7	-3.2	1.8	-2.7	1.4
Unplanned readmission rate, 30-day PDP	5,239	5,237	17.6%	16.7%	18.1%	18.0%	-0.9	-2.8	1.1	-2.5	0.7
Unplanned readmission rate, 90-day PDP	5,219	5,220	29.4%	29.1%	30.7%	29.9%	0.4	-2.1	3.0	-1.7	2.6
All-cause mortality rate, 30-day PDP	5,207	5,197	9.9%	9.8%	9.6%	9.6%	-0.1*	-1.7	1.5	-1.5	1.2
All-cause mortality rate, 90-day PDP	5,189	5,180	17.8%	16.2%	16.2%	15.9%	-1.3	-3.3	0.6	-3.0	0.3
All-cause mortality rate, 120-day PDP	4,968	4,956	20.2%	18.5%	18.5%	18.0%	-1.1	-3.1	0.8	-2.8	0.5

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.15: Cardiac Arrhythmia Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	5,973	5,936	$16,913	$17,596	$16,697	$17,557	-$177	-$901	$548	-$784	$431
Total allowed payment amount, IP through 120-day PDP	5,739	5,705	$19,245	$20,185	$18,936	$20,043	-$166	-$1,036	$704	-$896	$564
Total amount included in the bundle definition, 90-day episodes	5,973	5,936	$16,408	$16,967	$16,165	$16,872	-$149	-$852	$553	-$739	$440
Total amount not included the bundle, 90-day episodes	5,973	5,936	$799	$931	$793	$967	-$41	-$183	$101	-$160	$78
Allowed payment amount for Part B services, 30 days pre-bundle	5,973	5,936	$1,480	$1,618	$1,389	$1,582	-$55	-$169	$59	-$150	$41
Total allowed payment amount, 30 days post-bundle	5,491	5,484	$2,515	$2,716	$2,403	$2,597	$7	-$332	$346	-$278	$291
Total allowed payment amount, 90 days post-bundle	5,275	5,257	$7,179	$7,620	$6,992	$7,567	-$134	-$804	$536	-$696	$428
Inpatient anchor stay standardized allowed amount	6,018	6,021	$4,762	$4,746	$4,777	$4,724	$38	-$26	$101	-$15	$91
Readmissions standardized allowed amount, 90-day PDP	6,018	6,021	$3,234	$3,446	$3,392	$3,412	$192	-$208	$592	-$144	$528
SNF standardized allowed amount, 90-day PDP	6,018	6,021	$2,782	$2,690	$2,346	$2,573	-$319	-$679	$41	-$621	-$17
HHA standardized allowed amount, 90-day PDP	6,018	6,021	$836	$901	$824	$841	$48	-$32	$128	-$19	$115
IRF standardized allowed amount, 90-day PDP	6,018	6,021	$348	$393	$394	$445	-$7	-$162	$149	-$137	$124
Therapy standardized allowed amount, 90-day PDP	5,973	5,936	$93	$71	$79	$76	-$19	-$40	$3	-$37	-$1
Imaging and laboratory services standardized allowed amount, 90-day PDP	5,973	5,936	$497	$492	$526	$526	-$5	-$38	$28	-$32	$23
Procedures standardized allowed amount, 90-day PDP	5,973	5,936	$368	$386	$371	$387	$2	-$42	$45	-$35	$38
Evaluation and management standardized allowed amount, 90-day PDP	5,973	5,936	$1,153	$1,228	$1,189	$1,215	$49	-$27	$125	-$15	$113

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	5,973	5,936	$980	$1,459	$913	$1,420	-$27	-$220	$166	-$189	$135
Other non-institutional services standardized allowed amount, 90-day PDP	5,973	5,936	$347	$378	$388	$416	$3	-$43	$48	-$36	$41
Anchor inpatient length of stay	6,029	6,029	3.9	3.8	3.9	3.8	0.0	-0.1	0.1	-0.1	0.1
Number of institutional PAC days, 90-day PDP[1]	1,252	1,021	32.3	28.9	30.7	30.5	-3.3	-6.1	-0.4	-5.6	-0.9
Number of SNF days, 90-day PDP[1]	1,150	898	32.8	29.5	32.0	31.5	-2.9	-5.8	0.0	-5.4	-0.5
Number of HHA visits, 90-day PDP[1]	1,857	1,690	14.5	14.6	15.5	14.5	1.1	0.1	2.2	0.3	2.0
Patients discharged to PAC	6,026	6,022	32.5%	31.9%	30.6%	30.9%	-0.9	-3.0	1.2	-2.7	0.9
Patients discharged to institutional PAC (of those who received PAC)	2,048	1,814	43.0%	43.4%	39.8%	40.0%	0.2	-4.4	4.8	-3.7	4.1
Emergency department use, 30-day PDP	5,976	5,979	10.9%	11.5%	11.2%	12.1%	-0.3	-2.0	1.5	-1.7	1.2
Emergency department use, 90-day PDP	5,965	5,971	21.5%	23.1%	21.8%	23.4%	0.0	-2.3	2.3	-1.9	2.0
Unplanned readmission rate, 30-day PDP	5,976	5,979	12.1%	11.8%	13.0%	12.8%	-0.2	-1.8	1.5	-1.5	1.2
Unplanned readmission rate, 90-day PDP	5,965	5,971	21.6%	22.6%	23.9%	23.5%	1.4	-0.7	3.6	-0.4	3.2
All-cause mortality rate, 30-day PDP	5,943	5,952	3.4%	3.3%	3.0%	3.2%	-0.3	-1.3	0.7	-1.1	0.6
All-cause mortality rate, 90-day PDP	5,932	5,944	7.0%	6.9%	7.2%	6.6%	0.6	-0.7	1.9	-0.5	1.7
All-cause mortality rate, 120-day PDP	5,697	5,716	8.4%	8.3%	8.7%	7.9%	0.7	-0.8	2.2	-0.5	1.9

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.16: Cardiac Valve Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	3,926	3,902	$61,576	$60,490	$62,955	$63,137	-$1,268	-$3,098	$562	-$2,804	$268
Total allowed payment amount, IP through 120-day PDP	3,796	3,756	$63,620	$62,715	$65,210	$65,644	-$1,340	-$3,318	$639	-$3,000	$321
Total amount included in the bundle definition, 30-day episodes	1,045	1,038	$54,114	$51,988	$53,873	$54,210	-$2,463	-$4,266	-$661	-$3,976	-$951
Total amount not included the bundle, 30-day episodes	1,045	1,038	$118	$163	$205	$243	$7	-$190	$204	-$158	$173
Total amount included in the bundle definition, 90-day episodes	2,886	2,866	$58,599	$58,107	$58,664	$58,984	-$813	-$2,340	$713	-$2,095	$468
Total amount not included the bundle, 90-day episodes	2,886	2,866	$669	$742	$705	$720	$58	-$225	$341	-$180	$295
Allowed payment amount for Part B services, 30 days pre-bundle	3,931	3,904	$2,313	$2,534	$2,230	$2,325	$127	-$53	$306	-$24	$277
Total allowed payment amount, 30 days post-bundle	3,788	3,757	$2,602	$2,516	$2,841	$2,983	-$228	-$668	$212	-$597	$141
Total allowed payment amount, 90 days post-bundle	3,670	3,620	$7,084	$6,830	$7,413	$7,536	-$377	-$1,459	$704	-$1,285	$530
Inpatient anchor stay standardized allowed amount	3,940	3,923	$38,757	$40,503	$39,720	$41,755	-$289	-$1,768	$1,190	-$1,530	$952
Readmissions standardized allowed amount, 90-day PDP	3,935	3,923	$3,930	$3,225	$3,961	$3,695	-$438	-$1,044	$167	-$947	$70
SNF standardized allowed amount, 90-day PDP	3,935	3,923	$3,698	$3,057	$4,129	$3,786	-$298	-$996	$400	-$884	$288
HHA standardized allowed amount, 90-day PDP	3,935	3,923	$1,842	$1,926	$1,765	$1,735	$114	-$40	$268	-$15	$243
IRF standardized allowed amount, 90-day PDP	3,935	3,923	$2,282	$1,760	$2,138	$1,895	-$280	-$1,197	$637	-$1,050	$490
Therapy standardized allowed amount, 90-day PDP	3,926	3,902	$71	$50	$48	$61	-$34	-$56	-$12	-$52	-$16
Imaging and laboratory services standardized allowed amount, 90-day PDP	3,926	3,902	$603	$632	$626	$661	-$6	-$47	$35	-$41	$29

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	3,926	3,902	$305	$267	$302	$291	-$26	-$78	$25	-$69	$17
Evaluation and management standardized allowed amount, 90-day PDP	3,926	3,902	$1,481	$1,325	$1,536	$1,438	-$58	-$178	$63	-$159	$44
Other institutional services standardized allowed amount, 90-day PDP	3,926	3,902	$842	$1,073	$802	$1,124	-$91	-$249	$67	-$224	$41
Other non-institutional services standardized allowed amount, 90-day PDP	3,926	3,902	$303	$352	$348	$399	-$1	-$73	$71	-$62	$59
Anchor inpatient length of stay	3,957	3,957	9.5	7.7	10.1	8.3	0.0	-0.6	0.5	-0.5	0.5
Number of institutional PAC days, 90-day PDP[1]	1,209	1,462	21.9	22.8	23.8	23.0	1.7	-0.7	4.1	-0.3	3.7
Number of SNF days, 90-day PDP[1]	882	1,108	24.1	24.5	25.6	25.0	1.0	-1.7	3.6	-1.3	3.2
Number of HHA visits, 90-day PDP[1]	2,675	2,441	13.0	12.4	12.6	12.4	-0.4	-1.3	0.5	-1.1	0.3
Patients discharged to PAC	3,955	3,953	76.9%	74.1%	76.6%	72.3%	1.4	-3.7	6.5	-2.9	5.6
Patients discharged to institutional PAC (of those who received PAC)	2,977	2,852	53.4%	37.7%	54.1%	48.9%	-10.5	-18.0	-3.1	-16.8	-4.3
Emergency department use, 30-day PDP	3,951	3,950	11.6%	11.8%	11.7%	12.4%	-0.5	-2.8	1.8	-2.4	1.4
Emergency department use, 90-day PDP	3,929	3,917	19.8%	20.8%	21.6%	23.2%	-0.6	-3.1	1.8	-2.7	1.4
Unplanned readmission rate, 30-day PDP	3,951	3,950	18.0%	14.2%	18.9%	16.7%	-1.6	-4.6	1.3	-4.1	0.8
Unplanned readmission rate, 90-day PDP	3,929	3,917	26.5%	21.9%	28.0%	25.6%	-2.2*	-5.3	0.9	-4.8	0.4
All-cause mortality rate, 30-day PDP	3,939	3,948	2.2%	1.9%	2.0%	1.9%	-0.2	-1.5	1.1	-1.3	0.9
All-cause mortality rate, 90-day PDP	3,917	3,915	5.0%	3.6%	4.0%	3.6%	-1.0	-2.7	0.7	-2.4	0.5
All-cause mortality rate, 120-day PDP	3,787	3,769	5.6%	4.2%	5.0%	4.3%	-0.8	-2.6	0.9	-2.3	0.7

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.17: Other Vascular Surgery Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,555	1,551	$36,373	$37,778	$36,162	$36,841	$726*	-$1,861	$3,313	-$1,445	$2,897
Total allowed payment amount, IP through 120-day PDP	1,496	1,488	$40,140	$41,851	$39,760	$40,709	$763*	-$2,365	$3,890	-$1,862	$3,388
Total amount included in the bundle definition, 90-day episodes	1,481	1,474	$35,225	$35,647	$34,462	$35,019	-$136	-$2,361	$2,089	-$2,003	$1,731
Total amount not included the bundle, 90-day episodes	1,481	1,474	$1,181	$1,530	$1,081	$1,356	$74	-$379	$526	-$306	$454
Allowed payment amount for Part B services, 30 days pre-bundle	1,558	1,551	$2,120	$2,366	$2,050	$2,282	$13	-$225	$251	-$186	$213
Total allowed payment amount, 30 days post-bundle	1,428	1,430	$4,407	$4,347	$4,261	$4,364	-$164	-$952	$625	-$825	$498
Total allowed payment amount, 90 days post-bundle	1,365	1,370	$12,783	$12,323	$11,468	$12,573	-$1,565	-$3,873	$744	-$3,502	$373
Inpatient anchor stay standardized allowed amount	1,578	1,584	$13,953	$15,166	$14,093	$15,618	-$313	-$824	$199	-$742	$116
Readmissions standardized allowed amount, 90-day PDP	1,575	1,584	$5,518	$5,584	$5,768	$5,610	$225	-$924	$1,373	-$740	$1,189
SNF standardized allowed amount, 90-day PDP	1,575	1,584	$5,010	$5,038	$4,493	$4,276	$245	-$680	$1,169	-$531	$1,021
HHA standardized allowed amount, 90-day PDP	1,575	1,584	$1,448	$1,545	$1,425	$1,514	$8	-$216	$231	-$180	$195
IRF standardized allowed amount, 90-day PDP	1,575	1,584	$1,110	$1,392	$1,243	$1,225	$301	-$257	$859	-$167	$769
Therapy standardized allowed amount, 90-day PDP	1,555	1,551	$88	$83	$92	$107	-$20	-$68	$27	-$61	$20
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,555	1,551	$496	$531	$527	$518	$44	-$35	$123	-$22	$110
Procedures standardized allowed amount, 90-day PDP	1,555	1,551	$724	$740	$730	$668	$78	-$58	$214	-$36	$193
Evaluation and management standardized allowed amount, 90-day PDP	1,555	1,551	$1,665	$1,646	$1,588	$1,516	$53	-$182	$287	-$144	$250

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	1,555	1,551	$1,057	$1,453	$1,024	$1,288	$132	-$150	$414	-$105	$369
Other non-institutional services standardized allowed amount, 90-day PDP	1,555	1,551	$445	$463	$466	$444	$40	-$78	$159	-$59	$140
Anchor inpatient length of stay	1,590	1,590	6.0	5.8	5.7	5.9	-0.4	-0.9	0.1	-0.8	0.1
Number of institutional PAC days, 90-day PDP[1]	598	522	33.6	30.9	35.6	30.8	2.1	-2.1	6.3	-1.5	5.6
Number of SNF days, 90-day PDP[1]	491	420	35.0	32.2	36.3	31.9	1.7	-2.9	6.2	-2.2	5.5
Number of HHA visits, 90-day PDP[1]	796	734	16.7	16.4	17.6	17.5	-0.2	-1.9	1.5	-1.7	1.2
Patients discharged to PAC	1,590	1,589	57.7%	55.6%	52.0%	53.6%	-3.8	-10.0	2.4	-9.0	1.4
Patients discharged to institutional PAC (of those who received PAC)	911	849	55.4%	52.5%	49.4%	50.2%	-3.7	-10.9	3.5	-9.7	2.4
Emergency department use, 30-day PDP	1,578	1,585	11.1%	11.8%	11.3%	12.2%	-0.1	-3.7	3.5	-3.1	2.9
Emergency department use, 90-day PDP	1,563	1,579	21.1%	22.2%	21.7%	22.9%	-0.1	-4.6	4.4	-3.8	3.7
Unplanned readmission rate, 30-day PDP	1,578	1,585	15.9%	15.5%	17.0%	17.5%	-0.8*	-4.9	3.3	-4.3	2.7
Unplanned readmission rate, 90-day PDP	1,563	1,579	27.5%	29.0%	30.0%	29.7%	1.9	-2.8	6.6	-2.1	5.8
All-cause mortality rate, 30-day PDP	1,570	1,576	4.7%	3.1%	3.1%	3.1%	-1.5*	-3.5	0.5	-3.2	0.1
All-cause mortality rate, 90-day PDP	1,555	1,570	9.6%	7.5%	8.5%	7.3%	-0.9	-3.9	2.0	-3.4	1.6
All-cause mortality rate, 120-day PDP	1,497	1,507	10.7%	9.3%	10.2%	8.9%	-0.1	-3.2	3.0	-2.7	2.5

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.18: Gastrointestinal Hemorrhage Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	4,339	4,348	$19,698	$19,572	$19,439	$19,571	-$259	-$1,206	$689	-$1,054	$537
Total allowed payment amount, IP through 120-day PDP	4,192	4,212	$22,138	$22,079	$21,924	$21,983	-$118	-$1,259	$1,023	-$1,076	$840
Total amount included in the bundle definition, 90-day episodes	4,339	4,348	$18,704	$18,323	$18,565	$18,611	-$426	-$1,352	$499	-$1,203	$351
Total amount not included the bundle, 90-day episodes	4,339	4,348	$1,086	$1,285	$1,007	$1,144	$62	-$140	$265	-$108	$232
Allowed payment amount for Part B services, 30 days pre-bundle	4,339	4,348	$1,571	$1,719	$1,538	$1,731	-$44	-$180	$91	-$158	$69
Total allowed payment amount, 30 days post-bundle	3,892	3,929	$2,723	$2,767	$2,757	$2,604	$197	-$150	$544	-$94	$488
Total allowed payment amount, 90 days post-bundle	3,754	3,792	$8,115	$7,873	$8,185	$7,991	-$47	-$903	$808	-$765	$671
Inpatient anchor stay standardized allowed amount	4,374	4,377	$6,324	$6,330	$6,353	$6,356	$3	-$49	$54	-$40	$46
Readmissions standardized allowed amount, 90-day PDP	4,374	4,377	$3,563	$3,730	$3,408	$3,240	$335	-$99	$769	-$29	$699
SNF standardized allowed amount, 90-day PDP	4,374	4,377	$3,232	$2,858	$2,996	$3,341	-$720	-$1,237	-$203	-$1,154	-$286
HHA standardized allowed amount, 90-day PDP	4,374	4,377	$856	$961	$877	$865	$118	$12	$223	$29	$206
Therapy standardized allowed amount, 90-day PDP	4,339	4,348	$104	$121	$116	$112	$21	-$12	$54	-$6	$48
Imaging and laboratory services standardized allowed amount, 90-day PDP	4,339	4,348	$467	$446	$452	$459	-$28	-$63	$6	-$58	$1
Procedures standardized allowed amount, 90-day PDP	4,339	4,348	$370	$348	$360	$326	$13	-$30	$55	-$23	$48
Evaluation and management standardized allowed amount, 90-day PDP	4,339	4,348	$1,208	$1,208	$1,177	$1,170	$7	-$73	$87	-$60	$75
Other institutional services standardized allowed amount, 90-day PDP	4,339	4,348	$718	$859	$728	$887	-$19	-$147	$109	-$126	$88

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	4,339	4,348	$445	$452	$435	$474	-$31	-$96	$34	-$86	$23
Anchor inpatient length of stay	4,386	4,386	4.8	4.5	4.9	4.6	0.0	-0.2	0.1	-0.2	0.1
Number of institutional PAC days, 90-day PDP[1]	972	891	32.4	29.3	29.8	31.8	-5.2	-8.3	-2.1	-7.8	-2.6
Number of SNF days, 90-day PDP[1]	907	822	32.7	29.4	30.0	32.4	-5.7	-9.0	-2.3	-8.5	-2.8
Number of HHA visits, 90-day PDP[1]	1,386	1,233	15.4	15.3	14.9	14.9	-0.2	-1.4	1.1	-1.2	0.9
Patients discharged to PAC	4,383	4,383	36.8%	35.1%	34.7%	33.2%	-0.1	-3.1	2.8	-2.6	2.3
Patients discharged to institutional PAC (of those who received PAC)	1,598	1,452	52.4%	47.4%	49.5%	46.8%	-2.3	-7.5	2.8	-6.7	2.0
Emergency department use, 30-day PDP	4,336	4,345	8.5%	9.3%	8.5%	9.4%	-0.2*	-1.9	1.6	-1.6	1.3
Emergency department use, 90-day PDP	4,324	4,336	17.7%	19.1%	17.3%	19.7%	-1.0	-3.3	1.2	-2.9	0.9
Unplanned readmission rate, 30-day PDP	4,336	4,345	14.6%	13.1%	14.0%	12.3%	0.2	-1.9	2.3	-1.6	2.0
Unplanned readmission rate, 90-day PDP	4,324	4,336	25.1%	24.0%	24.9%	23.3%	0.5	-2.1	3.1	-1.6	2.7
All-cause mortality rate, 30-day PDP	4,318	4,313	4.6%	4.3%	5.0%	3.8%	0.9	-0.4	2.1	-0.2	1.9
All-cause mortality rate, 90-day PDP	4,306	4,304	10.1%	9.1%	9.5%	8.3%	0.1	-1.6	1.9	-1.3	1.6
All-cause mortality rate, 120-day PDP	4,158	4,170	11.9%	10.6%	11.5%	9.8%	0.5	-1.4	2.4	-1.1	2.1

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.19: Major Bowel Procedure Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	2,969	2,964	$38,134	$36,341	$37,284	$35,848	-$357	-$2,075	$1,361	-$1,799	$1,085
Total allowed payment amount, IP through 120-day PDP	2,816	2,808	$40,979	$38,873	$40,018	$38,463	-$551	-$2,502	$1,400	-$2,188	$1,086
Total amount included in the bundle definition, 90-day episodes	2,694	2,685	$36,415	$34,997	$35,711	$34,072	$221	-$1,256	$1,698	-$1,019	$1,461
Total amount not included the bundle, 90-day episodes	2,694	2,685	$860	$948	$918	$1,025	-$19	-$320	$282	-$272	$234
Allowed payment amount for Part B services, 30 days pre-bundle	2,977	2,968	$1,900	$1,909	$1,779	$1,952	-$163	-$307	-$18	-$284	-$42
Total allowed payment amount, 30 days post-bundle	2,778	2,777	$3,350	$2,970	$3,229	$2,861	-$13	-$508	$482	-$428	$402
Total allowed payment amount, 90 days post-bundle	2,650	2,634	$8,757	$8,025	$8,881	$7,926	$222	-$963	$1,406	-$772	$1,216
Inpatient anchor stay standardized allowed amount	3,002	2,988	$18,130	$17,718	$18,175	$17,935	-$172	-$645	$301	-$569	$225
Readmissions standardized allowed amount, 90-day PDP	2,994	2,988	$3,291	$3,441	$3,477	$3,188	$439	-$217	$1,096	-$112	$990
SNF standardized allowed amount, 90-day PDP	2,994	2,988	$4,225	$3,712	$3,971	$3,586	-$128	-$795	$539	-$688	$431
HHA standardized allowed amount, 90-day PDP	2,994	2,988	$1,355	$1,552	$1,382	$1,380	$199	$36	$362	$63	$336
IRF standardized allowed amount, 90-day PDP	2,994	2,988	$846	$859	$803	$827	-$12	-$349	$325	-$294	$271
Therapy standardized allowed amount, 90-day PDP	2,969	2,964	$57	$44	$56	$45	-$2	-$27	$24	-$23	$20
Imaging and laboratory services standardized allowed amount, 90-day PDP	2,969	2,964	$497	$510	$492	$497	$8	-$44	$60	-$36	$52
Procedures standardized allowed amount, 90-day PDP	2,969	2,964	$451	$444	$428	$401	$21	-$42	$84	-$31	$74
Evaluation and management standardized allowed amount, 90-day PDP	2,969	2,964	$1,220	$1,189	$1,264	$1,257	-$24	-$169	$121	-$146	$98

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	2,969	2,964	$1,216	$1,138	$977	$1,112	-$213	-$398	-$28	-$368	-$58
Other non-institutional services standardized allowed amount, 90-day PDP	2,969	2,964	$648	$621	$674	$608	$38	-$76	$153	-$58	$134
Anchor inpatient length of stay	3,029	3,029	9.3	8.5	9.5	8.4	0.3	-0.1	0.7	0.0	0.6
Number of institutional PAC days, 90-day PDP[1]	967	846	31.9	27.3	30.7	27.0	-0.9	-4.1	2.4	-3.5	1.8
Number of SNF days, 90-day PDP[1]	807	712	32.1	27.3	29.5	26.7	-2.0	-5.7	1.6	-5.1	1.0
Number of HHA visits, 90-day PDP[1]	1,471	1,341	15.7	15.4	16.1	15.3	0.4	-1.1	1.9	-0.8	1.7
Patients discharged to PAC	3,027	3,027	56.4%	58.9%	55.5%	52.7%	5.3	0.7	9.9	1.4	9.1
Patients discharged to institutional PAC (of those who received PAC)	1,779	1,569	52.9%	49.4%	54.2%	52.3%	-1.6	-6.4	3.2	-5.7	2.4
Emergency department use, 30-day PDP	3,020	3,025	11.4%	10.7%	10.8%	11.5%	-1.3	-4.1	1.4	-3.6	0.9
Emergency department use, 90-day PDP	2,985	2,984	18.3%	20.1%	18.7%	19.9%	0.6	-2.7	4.0	-2.2	3.5
Unplanned readmission rate, 30-day PDP	3,020	3,025	15.6%	14.8%	14.8%	13.0%	1.0	-2.3	4.2	-1.8	3.7
Unplanned readmission rate, 90-day PDP	2,985	2,984	23.7%	23.4%	23.9%	21.6%	2.1	-2.1	6.2	-1.4	5.6
All-cause mortality rate, 30-day PDP	3,015	3,017	3.5%	3.1%	3.3%	3.4%	-0.5	-1.8	0.8	-1.6	0.6
All-cause mortality rate, 90-day PDP	2,980	2,976	6.8%	6.1%	7.1%	6.6%	-0.2	-2.1	1.7	-1.8	1.4
All-cause mortality rate, 120-day PDP	2,827	2,818	8.1%	7.4%	7.9%	7.9%	-0.7	-2.7	1.3	-2.3	1.0

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.20: Fractures of the Femur and Hip or Pelvis Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,081	1,078	$30,389	$30,757	$29,485	$30,665	-$813	-$3,135	$1,510	-$2,761	$1,136
Total allowed payment amount, IP through 120-day PDP	1,031	1,015	$33,066	$33,379	$32,039	$33,050	-$698	-$3,377	$1,982	-$2,946	$1,551
Total amount included in the bundle definition, 90-day episodes	1,057	1,054	$29,543	$29,558	$28,829	$29,655	-$811	-$3,109	$1,487	-$2,739	$1,118
Total amount not included the bundle, 90-day episodes	1,057	1,054	$648	$976	$873	$842	$360	$13	$707	$68	$651
Allowed payment amount for Part B services, 30 days pre-bundle	1,081	1,078	$1,312	$1,492	$1,345	$1,480	$45	-$128	$218	-$100	$190
Total allowed payment amount, 30 days post-bundle	939	919	$2,978	$3,100	$2,870	$2,636	$356	-$397	$1,108	-$276	$987
Total allowed payment amount, 90 days post-bundle	896	865	$8,150	$8,061	$7,651	$8,306	-$745	-$2,677	$1,187	-$2,366	$877
Inpatient anchor stay standardized allowed amount	1,088	1,086	$4,899	$5,133	$4,846	$5,001	$79	-$191	$349	-$148	$305
Readmissions standardized allowed amount, 90-day PDP	1,088	1,086	$2,235	$2,606	$2,372	$2,210	$533	-$210	$1,275	-$90	$1,155
SNF standardized allowed amount, 90-day PDP	1,088	1,086	$14,726	$13,940	$14,176	$14,427	-$1,038	-$2,927	$850	-$2,623	$546
HHA standardized allowed amount, 90-day PDP	1,088	1,086	$1,962	$2,134	$2,038	$2,100	$111	-$160	$381	-$117	$338
IRF standardized allowed amount, 90-day PDP	1,088	1,086	$1,971	$2,015	$1,567	$2,021	-$410	-$1,346	$526	-$1,196	$375
Therapy standardized allowed amount, 90-day PDP	1,081	1,078	$233	$248	$259	$256	$18	-$98	$134	-$79	$115
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,081	1,078	$277	$285	$271	$251	$28	-$21	$77	-$13	$69
Procedures standardized allowed amount, 90-day PDP	1,081	1,078	$179	$226	$239	$196	$90	$28	$151	$38	$141
Evaluation and management standardized allowed amount, 90-day PDP	1,081	1,078	$1,421	$1,433	$1,229	$1,384	-$144	-$333	$45	-$303	$15
Other institutional services standardized allowed amount, 90-day PDP	1,081	1,078	$305	$333	$295	$401	-$78	-$205	$48	-$185	$28

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	1,081	1,078	$485	$487	$500	$528	-$26	-$129	$77	-$113	$61
Anchor inpatient length of stay	1,092	1,092	4.6	4.6	4.5	4.5	0.0	-0.2	0.2	-0.2	0.2
Number of institutional PAC days, 90-day PDP[1]	872	842	38.4	34.3	37.9	36.4	-2.6	-6.1	0.8	-5.5	0.3
Number of SNF days, 90-day PDP[1]	786	766	40.2	35.8	39.1	37.6	-3.0	-6.6	0.6	-6.0	0.0
Number of HHA visits, 90-day PDP[1]	668	620	14.1	15.4	14.9	15.2	0.9	-0.7	2.6	-0.4	2.3
Patients discharged to PAC	1,092	1,091	88.0%	86.8%	85.1%	84.7%	-0.9	-5.6	3.8	-4.8	3.0
Patients discharged to institutional PAC (of those who received PAC)	958	919	90.0%	90.0%	88.0%	89.9%	-2.0	-5.9	2.0	-5.3	1.3
Emergency department use, 30-day PDP	1,091	1,088	7.9%	7.9%	6.1%	6.7%	-0.6	-4.0	2.8	-3.5	2.3
Emergency department use, 90-day PDP	1,087	1,082	18.6%	20.2%	16.3%	17.3%	0.6	-4.1	5.4	-3.3	4.6
Unplanned readmission rate, 30-day PDP	1,091	1,088	9.0%	8.4%	12.1%	9.6%	2.0	-1.9	5.9	-1.3	5.2
Unplanned readmission rate, 90-day PDP	1,087	1,082	17.3%	18.7%	20.6%	17.8%	4.2	-0.9	9.4	-0.1	8.5
All-cause mortality rate, 30-day PDP	1,067	1,069	5.1%	7.6%	7.0%	7.9%	1.5	-1.9	4.9	-1.3	4.4
All-cause mortality rate, 90-day PDP	1,063	1,063	10.3%	13.6%	12.0%	13.3%	2.1	-2.2	6.4	-1.5	5.7
All-cause mortality rate, 120-day PDP	1,015	1,000	12.2%	15.4%	14.0%	14.2%	3.1*	-1.3	7.5	-0.6	6.8

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, mortality and total payments not included in the bundle outcomes.

Exhibit I.21: Medical Non-infectious Orthopedic, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	6,446	6,412	$27,701	$27,649	$26,162	$27,994	-$1,884	-$2,952	-$817	-$2,780	-$989
Total allowed payment amount, IP through 120-day PDP	6,163	6,097	$30,878	$30,706	$29,091	$31,186	-$2,266	-$3,490	-$1,043	-$3,293	-$1,240
Total amount included in the bundle definition, 90-day episodes	6,446	6,413	$26,549	$26,566	$25,215	$26,873	-$1,641	-$2,682	-$599	-$2,515	-$767
Total amount not included the bundle, 90-day episodes	6,446	6,413	$1,055	$1,151	$924	$1,072	-$52	-$258	$154	-$225	$121
Allowed payment amount for Part B services, 30 days pre-bundle	6,446	6,413	$1,505	$1,651	$1,485	$1,697	-$66	-$166	$35	-$150	$19
Total allowed payment amount, 30 days post-bundle	5,969	5,860	$3,426	$3,252	$3,152	$3,410	-$431	-$760	-$102	-$708	-$155
Total allowed payment amount, 90 days post-bundle	5,682	5,570	$9,598	$9,163	$9,193	$9,382	-$624	-$1,419	$171	-$1,291	$43
Inpatient anchor stay standardized allowed amount	6,561	6,558	$5,106	$5,302	$5,095	$5,258	$32	-$48	$113	-$35	$100
Readmissions standardized allowed amount, 90-day PDP	6,561	6,558	$3,423	$3,275	$3,257	$3,399	-$290	-$669	$89	-$608	$28
SNF standardized allowed amount, 90-day PDP	6,561	6,558	$10,262	$9,805	$9,630	$10,653	-$1,480	-$2,319	-$640	-$2,184	-$775
HHA standardized allowed amount, 90-day PDP	6,561	6,558	$1,659	$1,937	$1,671	$1,800	$148	$35	$261	$53	$243
IRF standardized allowed amount, 90-day PDP	6,561	6,558	$1,817	$1,864	$1,192	$1,519	-$280	-$647	$86	-$588	$27
Therapy standardized allowed amount, 90-day PDP	6,446	6,413	$210	$206	$198	$201	-$6	-$44	$33	-$38	$26
Imaging and laboratory services standardized allowed amount, 90-day PDP	6,446	6,413	$405	$384	$410	$381	$9	-$22	$40	-$17	$35
Procedures standardized allowed amount, 90-day PDP	6,446	6,413	$380	$364	$375	$374	-$15	-$55	$26	-$49	$19
Evaluation and management standardized allowed amount, 90-day PDP	6,446	6,413	$1,521	$1,556	$1,441	$1,556	-$80	-$172	$12	-$157	-$3
Other institutional services standardized allowed amount, 90-day PDP	6,446	6,413	$562	$745	$574	$700	$56	-$30	$143	-$17	$129

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	6,446	6,413	$480	$483	$467	$506	-$37	-$83	$9	-$76	$2
Anchor inpatient length of stay	6,588	6,588	4.6	4.4	4.6	4.4	0.0	-0.1	0.2	-0.1	0.1
Number of institutional PAC days, 90-day PDP[1]	3,994	3,814	37.8	32.8	38.1	35.8	-2.6	-4.5	-0.7	-4.2	-1.0
Number of SNF days, 90-day PDP[1]	3,592	3,446	39.4	33.8	39.5	37.0	-3.0	-5.2	-0.9	-4.9	-1.2
Number of HHA visits, 90-day PDP[1]	3,672	3,428	15.4	15.9	15.2	15.0	0.8	0.0	1.6	0.1	1.4
Patients discharged to PAC	6,583	6,587	70.4%	72.0%	67.3%	71.2%	-2.2	-4.6	0.2	-4.2	-0.2
Patients discharged to institutional PAC (of those who received PAC)	4,803	4,633	75.5%	76.4%	72.6%	75.6%	-2.1	-5.0	0.8	-4.5	0.4
Emergency department use, 30-day PDP	6,532	6,532	9.2%	10.8%	10.1%	10.8%	0.9	-0.8	2.5	-0.5	2.2
Emergency department use, 90-day PDP	6,505	6,503	20.5%	22.9%	21.2%	23.1%	0.4	-1.6	2.5	-1.3	2.2
Unplanned readmission rate, 30-day PDP	6,532	6,532	12.1%	11.8%	11.9%	12.2%	-0.6	-2.2	1.1	-1.9	0.8
Unplanned readmission rate, 90-day PDP	6,505	6,503	23.2%	22.5%	23.9%	23.5%	-0.3	-2.3	1.7	-2.0	1.4
All-cause mortality rate, 30-day PDP	6,473	6,496	3.3%	3.2%	2.4%	3.1%	-0.8	-1.7	0.1	-1.6	-0.1
All-cause mortality rate, 90-day PDP	6,446	6,467	7.0%	6.7%	6.0%	7.0%	-1.4	-2.7	-0.1	-2.5	-0.3
All-cause mortality rate, 120-day PDP	6,162	6,144	8.4%	8.1%	7.5%	8.4%	-1.1	-2.6	0.3	-2.4	0.1

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.22: Revision of the Hip or Knee, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,141	1,140	$35,449	$37,407	$35,935	$37,561	$332	-$2,006	$2,670	-$1,630	$2,295
Total allowed payment amount, IP through 120-day PDP	1,099	1,099	$37,609	$39,673	$38,054	$39,983	$135	-$2,474	$2,743	-$2,055	$2,324
Total amount included in the bundle definition, 90-day episodes	1,141	1,140	$35,299	$36,693	$35,294	$37,090	-$402	-$2,605	$1,802	-$2,251	$1,448
Total amount not included the bundle, 90-day episodes	1,141	1,140	$283	$364	$311	$356	$35	-$164	$234	-$132	$202
Allowed payment amount for Part B services, 30 days pre-bundle	1,141	1,140	$1,085	$1,204	$1,144	$1,267	-$3	-$167	$160	-$141	$134
Total allowed payment amount, 30 days post-bundle	1,112	1,119	$2,131	$2,290	$2,128	$2,182	$104	-$464	$673	-$373	$581
Total allowed payment amount, 90 days post-bundle	1,073	1,079	$5,221	$6,098	$6,369	$6,295	$951	-$223	$2,124	-$34	$1,936
Inpatient anchor stay standardized allowed amount	1,144	1,145	$17,590	$18,674	$17,195	$18,729	-$451	-$1,080	$178	-$978	$77
Readmissions standardized allowed amount, 90-day PDP	1,144	1,145	$2,134	$2,611	$2,463	$2,427	$512	-$291	$1,315	-$162	$1,186
SNF standardized allowed amount, 90-day PDP	1,144	1,145	$6,316	$5,932	$6,293	$6,360	-$451	-$1,810	$908	-$1,591	$689
HHA standardized allowed amount, 90-day PDP	1,144	1,145	$2,300	$2,204	$2,314	$2,113	$105	-$300	$510	-$235	$445
Therapy standardized allowed amount, 90-day PDP	1,141	1,140	$658	$608	$512	$503	-$40	-$175	$95	-$153	$74
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,141	1,140	$356	$331	$351	$330	-$5	-$57	$48	-$49	$39
Procedures standardized allowed amount, 90-day PDP	1,141	1,140	$352	$417	$394	$428	$32	-$63	$127	-$48	$111
Evaluation and management standardized allowed amount, 90-day PDP	1,141	1,140	$843	$995	$978	$991	$139	-$39	$317	-$10	$288
Other institutional services standardized allowed amount, 90-day PDP	1,141	1,140	$369	$584	$450	$658	$7	-$199	$212	-$166	$179

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	1,141	1,140	$333	$286	$313	$371	-$104	-$210	$2	-$193	-$15
Anchor inpatient length of stay	1,146	1,146	4.5	4.2	4.7	4.4	0.0	-0.2	0.2	-0.2	0.2
Number of institutional PAC days, 90-day PDP[1]	558	536	24.6	26.8	26.2	25.4	2.9	-1.1	7.0	-0.5	6.4
Number of SNF days, 90-day PDP[1]	495	480	26.1	27.5	27.5	26.3	2.6	-2.0	7.1	-1.2	6.4
Number of HHA visits, 90-day PDP[1]	796	720	13.4	12.8	13.6	12.5	0.4	-0.8	1.6	-0.6	1.4
Patients discharged to PAC	1,146	1,146	83.8%	81.7%	85.8%	82.9%	0.9	-7.4	9.2	-6.0	7.8
Patients discharged to institutional PAC (of those who received PAC)	962	918	66.1%	53.9%	58.3%	57.4%	-11.2	-20.1	-2.4	-18.7	-3.8
Emergency department use, 30-day PDP	1,146	1,145	8.3%	11.5%	8.5%	10.7%	1.0	-3.3	5.4	-2.6	4.7
Emergency department use, 90-day PDP	1,144	1,144	16.4%	20.1%	17.2%	19.1%	1.8	-3.2	6.8	-2.3	6.0
Unplanned readmission rate, 30-day PDP	1,146	1,145	9.1%	9.4%	10.5%	9.6%	1.3	-1.9	4.5	-1.3	4.0
Unplanned readmission rate, 90-day PDP	1,144	1,144	15.9%	16.4%	17.8%	15.7%	2.5	-1.8	6.8	-1.1	6.2
All-cause mortality rate, 30-day PDP	1,145	1,143	0.3%	0.6%	0.2%	0.3%	0.2	-0.4	0.9	-0.3	0.8
All-cause mortality rate, 90-day PDP	1,143	1,142	0.9%	1.6%	0.8%	1.3%	0.1	-1.0	1.3	-0.8	1.1
All-cause mortality rate, 120-day PDP	1,101	1,101	1.5%	2.1%	0.9%	1.6%	-0.1	-1.5	1.3	-1.3	1.1

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.23: Spinal Fusion (non-cervical) Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	3,376	3,380	$40,420	$40,795	$40,022	$41,577	-$1,181	-$2,822	$460	-$2,558	$196
Total allowed payment amount, IP through 120-day PDP	3,213	3,216	$41,947	$42,339	$41,605	$42,991	-$995	-$2,771	$782	-$2,485	$496
Total amount included in the bundle definition, 90-day episodes	3,376	3,381	$39,561	$40,230	$39,609	$40,953	-$675	-$2,297	$947	-$2,036	$686
Total amount not included the bundle, 90-day episodes	3,376	3,381	$426	$347	$328	$340	-$90	-$234	$54	-$211	$30
Allowed payment amount for Part B services, 30 days pre-bundle	3,376	3,381	$1,094	$1,069	$1,190	$1,188	-$24	-$159	$111	-$137	$89
Total allowed payment amount, 30 days post-bundle	3,328	3,336	$1,505	$1,538	$1,545	$1,512	$66	-$263	$395	-$210	$342
Total allowed payment amount, 90 days post-bundle	3,157	3,174	$4,534	$4,544	$4,515	$4,660	-$134	-$946	$677	-$816	$547
Inpatient anchor stay standardized allowed amount	3,406	3,405	$23,499	$24,948	$23,493	$24,548	$393	-$158	$943	-$69	$855
Readmissions standardized allowed amount, 90-day PDP	3,406	3,405	$1,875	$1,728	$1,882	$1,908	-$174	-$679	$331	-$598	$250
SNF standardized allowed amount, 90-day PDP	3,406	3,405	$2,948	$2,808	$2,635	$2,959	-$464	-$1,064	$136	-$967	$40
HHA standardized allowed amount, 90-day PDP	3,406	3,405	$1,317	$1,363	$1,281	$1,382	-$55	-$241	$132	-$211	$102
IRF standardized allowed amount, 90-day PDP	3,406	3,405	$2,934	$2,454	$2,548	$2,436	-$369	-$1,143	$406	-$1,019	$282
Therapy standardized allowed amount, 90-day PDP	3,376	3,381	$289	$295	$264	$273	-$2	-$43	$39	-$36	$32
Imaging and laboratory services standardized allowed amount, 90-day PDP	3,376	3,381	$388	$364	$393	$380	-$12	-$53	$29	-$46	$23
Procedures standardized allowed amount, 90-day PDP	3,376	3,381	$326	$280	$303	$310	-$53	-$112	$6	-$103	-$3
Evaluation and management standardized allowed amount, 90-day PDP	3,376	3,381	$866	$823	$802	$814	-$56	-$148	$36	-$133	$21

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	3,376	3,381	$340	$416	$362	$532	-$94	-$187	-$1	-$172	-$16
Other non-institutional services standardized allowed amount, 90-day PDP	3,376	3,381	$221	$242	$222	$267	-$24	-$77	$30	-$69	$21
Anchor inpatient length of stay	3,417	3,417	4.4	4.2	4.7	4.3	0.1	-0.1	0.3	0.0	0.3
Number of institutional PAC days, 90-day PDP[1]	1,158	1,196	21.1	19.9	19.6	20.1	-1.7	-4.2	0.9	-3.8	0.5
Number of SNF days, 90-day PDP[1]	773	815	24.9	22.0	23.0	22.8	-2.7	-5.8	0.3	-5.3	-0.2
Number of HHA visits, 90-day PDP[1]	1,528	1,420	13.0	12.4	12.1	12.1	-0.6	-1.5	0.3	-1.3	0.1
Patients discharged to PAC	3,417	3,416	55.7%	52.9%	53.2%	55.0%	-4.7	-10.1	0.7	-9.2	-0.2
Patients discharged to institutional PAC (of those who received PAC)	1,864	1,836	65.7%	61.7%	64.8%	61.0%	-0.1	-7.2	6.9	-6.1	5.8
Emergency department use, 30-day PDP	3,415	3,415	11.5%	12.2%	11.5%	11.3%	0.9	-1.4	3.2	-1.0	2.9
Emergency department use, 90-day PDP	3,404	3,404	18.1%	20.3%	17.8%	18.5%	1.6	-1.5	4.6	-1.0	4.1
Unplanned readmission rate, 30-day PDP	3,415	3,415	8.2%	7.5%	6.6%	7.2%	-1.4	-3.3	0.5	-3.0	0.2
Unplanned readmission rate, 90-day PDP	3,404	3,404	11.7%	11.3%	10.0%	11.1%	-1.5	-3.6	0.7	-3.3	0.3
All-cause mortality rate, 30-day PDP	3,414	3,415	0.3%	0.3%	0.2%	0.2%	0.0	-0.4	0.4	-0.4	0.4
All-cause mortality rate, 90-day PDP	3,403	3,404	0.9%	0.6%	0.5%	0.6%	-0.4	-1.0	0.2	-0.9	0.1
All-cause mortality rate, 120-day PDP	3,239	3,238	1.1%	0.7%	0.7%	0.7%	-0.4	-1.0	0.3	-0.9	0.2

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.24: Hip & Femur Procedures except Major Joint Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	7,381	7,363	$43,855	$43,624	$43,394	$44,996	-$1,832	-$2,756	-$909	-$2,607	-$1,057
Total allowed payment amount, IP through 120-day PDP	7,085	7,054	$46,977	$46,602	$46,461	$48,077	-$1,991	-$3,095	-$886	-$2,918	-$1,064
Total amount included in the bundle definition, 90-day episodes	7,269	7,254	$43,222	$43,057	$42,871	$44,534	-$1,828	-$2,744	-$912	-$2,597	-$1,059
Total amount not included the bundle, 90-day episodes	7,269	7,254	$561	$534	$524	$509	-$11	-$136	$113	-$116	$93
Allowed payment amount for Part B services, 30 days pre-bundle	7,382	7,364	$1,360	$1,437	$1,370	$1,454	-$7	-$82	$69	-$70	$57
Total allowed payment amount, 30 days post-bundle	6,630	6,610	$3,585	$3,356	$3,480	$3,417	-$166	-$469	$138	-$420	$89
Total allowed payment amount, 90 days post-bundle	6,355	6,310	$9,459	$8,836	$9,150	$8,935	-$408	-$1,144	$328	-$1,026	$210
Inpatient anchor stay standardized allowed amount	7,405	7,401	$11,344	$11,882	$11,385	$11,908	$15	-$51	$81	-$41	$70
Readmissions standardized allowed amount, 90-day PDP	7,404	7,401	$2,771	$2,707	$2,707	$2,578	$65	-$270	$400	-$216	$346
SNF standardized allowed amount, 90-day PDP	7,404	7,401	$17,795	$16,773	$17,035	$18,194	-$2,182	-$3,107	-$1,256	-$2,958	-$1,405
HHA standardized allowed amount, 90-day PDP	7,404	7,401	$1,953	$2,287	$1,951	$2,097	$188	$76	$301	$94	$283
IRF standardized allowed amount, 90-day PDP	7,404	7,401	$3,343	$3,422	$3,708	$3,679	$108	-$462	$679	-$371	$587
Therapy standardized allowed amount, 90-day PDP	7,381	7,364	$254	$274	$256	$236	$40	$0	$80	$6	$74
Imaging and laboratory services standardized allowed amount, 90-day PDP	7,381	7,364	$295	$271	$307	$264	$18	$0	$36	$3	$33
Procedures standardized allowed amount, 90-day PDP	7,381	7,364	$229	$253	$234	$223	$36	$3	$69	$8	$63
Evaluation and management standardized allowed amount, 90-day PDP	7,381	7,364	$1,540	$1,587	$1,539	$1,598	-$12	-$101	$77	-$87	$63
Other institutional services standardized allowed amount, 90-day PDP	7,381	7,364	$339	$425	$334	$426	-$6	-$69	$56	-$59	$46

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	7,381	7,364	$552	$513	$520	$505	-$23	-$70	$23	-$62	$16
Anchor inpatient length of stay	7,446	7,446	6.1	5.7	6.1	5.8	0.0	-0.1	0.1	-0.1	0.1
Number of institutional PAC days, 90-day PDP[1]	6,646	6,516	42.6	37.3	41.5	40.6	-4.4	-5.9	-2.8	-5.7	-3.1
Number of SNF days, 90-day PDP[1]	5,766	5,641	45.6	39.6	45.2	43.3	-4.2	-5.8	-2.6	-5.5	-2.8
Number of HHA visits, 90-day PDP[1]	4,491	4,180	15.7	16.5	15.6	15.3	1.1	0.3	1.8	0.5	1.7
Patients discharged to PAC	7,444	7,446	93.6%	94.3%	93.1%	94.0%	-0.1	-1.3	1.1	-1.1	0.9
Patients discharged to institutional PAC (of those who received PAC)	7,052	6,968	93.3%	93.0%	92.9%	93.0%	-0.4	-1.9	1.1	-1.7	0.8
Emergency department use, 30-day PDP	7,439	7,444	7.4%	8.2%	7.3%	8.4%	-0.2	-1.4	1.1	-1.2	0.9
Emergency department use, 90-day PDP	7,397	7,400	16.4%	18.5%	17.0%	17.8%	1.3	-0.5	3.2	-0.2	2.9
Unplanned readmission rate, 30-day PDP	7,439	7,444	12.3%	11.0%	11.6%	10.6%	-0.3	-2.0	1.5	-1.7	1.2
Unplanned readmission rate, 90-day PDP	7,397	7,400	21.4%	20.5%	20.9%	20.2%	-0.3	-2.4	1.8	-2.1	1.5
All-cause mortality rate, 30-day PDP	7,316	7,324	4.8%	4.5%	3.6%	4.5%	-1.1	-2.1	-0.2	-2.0	-0.3
All-cause mortality rate, 90-day PDP	7,276	7,281	10.2%	9.8%	8.8%	9.5%	-1.0	-2.5	0.4	-2.2	0.2
All-cause mortality rate, 120-day PDP	6,984	6,973	12.0%	11.7%	10.8%	11.2%	-0.8	-2.4	0.8	-2.2	0.6

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.25: Cervical Spinal Fusion Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,159	1,169	$28,771	$30,940	$29,194	$30,550	$812	-$1,069	$2,694	-$767	$2,392
Total allowed payment amount, IP through 120-day PDP	1,105	1,104	$30,689	$32,877	$30,597	$32,423	$362	-$1,824	$2,548	-$1,473	$2,197
Total amount included in the bundle definition, 90-day episodes	1,159	1,169	$28,418	$30,185	$28,618	$29,922	$464	-$1,194	$2,121	-$927	$1,854
Total amount not included the bundle, 90-day episodes	1,159	1,169	$363	$501	$406	$392	$152	-$128	$432	-$83	$387
Allowed payment amount for Part B services, 30 days pre-bundle	1,159	1,169	$1,439	$1,339	$1,358	$1,387	-$129	-$371	$113	-$332	$75
Total allowed payment amount, 30 days post-bundle	1,134	1,141	$1,910	$1,915	$1,541	$1,814	-$268	-$789	$253	-$706	$170
Total allowed payment amount, 90 days post-bundle	1,080	1,073	$5,525	$5,683	$4,762	$5,079	-$160	-$1,455	$1,136	-$1,247	$927
Inpatient anchor stay standardized allowed amount	1,186	1,188	$14,280	$15,746	$14,566	$15,686	$345	-$14	$704	$44	$646
Readmissions standardized allowed amount, 90-day PDP	1,186	1,188	$1,581	$1,436	$1,506	$1,686	-$325	-$1,029	$379	-$916	$266
SNF standardized allowed amount, 90-day PDP	1,186	1,188	$2,378	$2,289	$2,388	$2,503	-$203	-$1,008	$601	-$879	$472
HHA standardized allowed amount, 90-day PDP	1,186	1,188	$978	$1,055	$1,001	$957	$121	-$124	$367	-$85	$328
IRF standardized allowed amount, 90-day PDP	1,186	1,188	$2,256	$2,637	$2,232	$2,067	$546	-$247	$1,340	-$120	$1,212
Therapy standardized allowed amount, 90-day PDP	1,159	1,169	$259	$282	$224	$203	$44	-$24	$112	-$13	$101
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,159	1,169	$417	$382	$403	$404	-$35	-$103	$34	-$92	$23
Procedures standardized allowed amount, 90-day PDP	1,159	1,169	$294	$290	$331	$286	$41	-$55	$137	-$39	$122
Evaluation and management standardized allowed amount, 90-day PDP	1,159	1,169	$793	$815	$756	$792	-$15	-$149	$120	-$128	$99
Other institutional services standardized allowed amount, 90-day PDP	1,159	1,169	$436	$534	$487	$518	$67	-$111	$246	-$83	$217

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	1,159	1,169	$256	$251	$253	$267	-$21	-$116	$75	-$101	$60
Anchor inpatient length of stay	1,190	1,190	3.4	3.3	3.5	3.4	0.0	-0.2	0.2	-0.2	0.2
Number of institutional PAC days, 90-day PDP[1]	320	285	26.3	27.7	25.3	27.4	-0.6	-5.8	4.5	-4.9	3.7
Number of SNF days, 90-day PDP[1]	196	199	30.8	31.3	27.8	28.8	-0.4	-7.0	6.1	-5.9	5.0
Number of HHA visits, 90-day PDP[1]	424	363	13.5	13.4	13.9	13.1	0.7	-1.4	2.9	-1.1	2.5
Patients discharged to PAC	1,190	1,190	37.0%	37.2%	36.1%	36.6%	-0.3	-6.6	6.0	-5.6	5.0
Patients discharged to institutional PAC (of those who received PAC)	495	446	61.6%	59.5%	63.2%	59.0%	2.2	-7.0	11.4	-5.5	9.9
Emergency department use, 30-day PDP	1,190	1,189	12.5%	10.8%	12.4%	10.7%	0.1	-3.5	3.6	-2.9	3.1
Emergency department use, 90-day PDP	1,186	1,187	20.9%	18.7%	20.8%	19.7%	-1.1	-5.9	3.7	-5.1	2.9
Unplanned readmission rate, 30-day PDP	1,190	1,189	6.9%	5.4%	8.7%	7.5%	-0.3	-3.4	2.8	-2.9	2.3
Unplanned readmission rate, 90-day PDP	1,186	1,187	11.3%	9.6%	11.2%	11.3%	-1.8	-5.9	2.2	-5.2	1.6
All-cause mortality rate, 30-day PDP	1,189	1,189	0.4%	0.5%	1.3%	0.9%	0.5	-0.7	1.6	-0.5	1.4
All-cause mortality rate, 90-day PDP	1,185	1,187	0.9%	0.9%	1.9%	1.8%	0.1	-1.3	1.6	-1.1	1.3
All-cause mortality rate, 120-day PDP	1,131	1,122	1.1%	1.1%	2.4%	2.0%	0.5	-1.0	2.0	-0.8	1.8

[1] Dependent on having at least one day or visit in the given setting.

Exhibit I.26: Lower Extremity and Humerus Procedure except Hip, Foot, Femur Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,061	1,064	$34,999	$37,668	$34,578	$37,556	-$309	-$2,989	$2,370	-$2,558	$1,939
Total allowed payment amount, IP through 120-day PDP	1,022	1,024	$38,032	$40,629	$37,388	$40,067	-$83	-$3,081	$2,914	-$2,599	$2,433
Total amount included in the bundle definition, 90-day episodes	1,061	1,064	$34,416	$37,181	$34,230	$37,058	-$63	-$2,680	$2,555	-$2,260	$2,134
Total amount not included the bundle, 90-day episodes	1,061	1,064	$403	$481	$395	$404	$69	-$180	$319	-$140	$279
Allowed payment amount for Part B services, 30 days pre-bundle	1,061	1,064	$1,397	$1,729	$1,614	$1,809	$137	-$148	$423	-$103	$377
Total allowed payment amount, 30 days post-bundle	1,011	1,006	$3,206	$3,051	$2,958	$2,738	$66	-$687	$819	-$566	$698
Total allowed payment amount, 90 days post-bundle	970	970	$8,089	$8,008	$7,737	$7,843	-$187	-$1,813	$1,438	-$1,552	$1,177
Inpatient anchor stay standardized allowed amount	1,082	1,084	$10,303	$11,342	$10,220	$11,409	-$149	-$352	$53	-$319	$21
Readmissions standardized allowed amount, 90-day PDP	1,082	1,084	$2,227	$2,573	$2,080	$2,512	-$86	-$937	$765	-$800	$628
SNF standardized allowed amount, 90-day PDP	1,082	1,084	$13,257	$13,930	$13,228	$13,273	$629	-$1,551	$2,808	-$1,200	$2,458
HHA standardized allowed amount, 90-day PDP	1,082	1,084	$1,862	$1,822	$1,915	$2,056	-$181	-$463	$101	-$417	$56
Therapy standardized allowed amount, 90-day PDP	1,061	1,064	$290	$325	$318	$293	$60	-$43	$163	-$26	$147
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,061	1,064	$312	$319	$319	$302	$25	-$33	$82	-$23	$73
Procedures standardized allowed amount, 90-day PDP	1,061	1,064	$390	$377	$334	$341	-$21	-$124	$83	-$108	$66
Evaluation and management standardized allowed amount, 90-day PDP	1,061	1,064	$1,197	$1,426	$1,090	$1,228	$92	-$130	$314	-$95	$278
Other institutional services standardized allowed amount, 90-day PDP	1,061	1,064	$488	$732	$599	$698	$145	-$65	$356	-$32	$323
Other non-institutional services standardized allowed amount, 90-day PDP	1,061	1,064	$400	$355	$385	$440	-$100	-$205	$5	-$188	-$12

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Anchor inpatient length of stay	1,089	1,089	4.9	4.8	5.0	5.0	-0.1	-0.5	0.2	-0.4	0.1
Number of institutional PAC days, 90-day PDP[1]	743	685	43.9	41.2	42.8	41.5	-1.4	-6.4	3.6	-5.6	2.8
Number of SNF days, 90-day PDP[1]	680	599	45.3	42.5	44.7	44.4	-2.4	-7.6	2.8	-6.8	2.0
Number of HHA visits, 90-day PDP[1]	621	620	15.1	14.2	16.2	15.1	0.2	-2.0	2.3	-1.6	2.0
Patients discharged to PAC	1,089	1,089	79.8%	77.6%	78.9%	80.6%	-3.9	-9.3	1.4	-8.4	0.6
Patients discharged to institutional PAC (of those who received PAC)	874	872	77.1%	82.8%	81.2%	77.2%	9.7	2.9	16.5	4.0	15.4
Emergency department use, 30-day PDP	1,089	1,088	9.3%	7.3%	8.6%	9.3%	-2.7*	-6.0	0.6	-5.5	0.1
Emergency department use, 90-day PDP	1,082	1,083	16.4%	16.7%	17.6%	18.5%	-0.6*	-5.9	4.6	-5.0	3.8
Unplanned readmission rate, 30-day PDP	1,089	1,088	8.9%	9.8%	9.4%	10.0%	0.3	-3.7	4.3	-3.0	3.7
Unplanned readmission rate, 90-day PDP	1,082	1,083	16.8%	18.0%	18.0%	18.0%	1.2	-4.2	6.6	-3.3	5.8
All-cause mortality rate, 30-day PDP	1,086	1,086	1.5%	1.3%	1.3%	1.5%	-0.4	-1.9	1.2	-1.6	0.9
All-cause mortality rate, 90-day PDP	1,079	1,081	4.5%	3.6%	3.2%	4.0%	-1.7	-4.1	0.8	-3.7	0.4
All-cause mortality rate, 120-day PDP	1,039	1,039	5.2%	4.8%	3.7%	4.9%	-1.7	-4.3	0.9	-3.9	0.5

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.27: Sepsis Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	25,671	25,674	$31,492	$30,648	$31,565	$31,134	-$413	-$1,348	$523	-$1,198	$372
Total allowed payment amount, IP through 120-day PDP	24,664	24,643	$34,581	$33,749	$34,754	$34,337	-$414	-$1,489	$660	-$1,316	$487
Total amount included in the bundle definition, 30-day episodes	652	642	$21,588	$20,271	$20,014	$19,686	-$989	-$3,953	$1,975	-$3,477	$1,499
Total amount not included the bundle, 30-day episodes	652	642	$629	$469	$379	$424	-$204	-$423	$15	-$388	-$20
Total amount included in the bundle definition, 90-day episodes	24,597	24,593	$29,802	$29,001	$29,892	$29,473	-$382	-$1,189	$425	-$1,059	$295
Total amount not included the bundle, 90-day episodes	24,597	24,593	$1,231	$1,303	$1,202	$1,234	$40	-$82	$162	-$62	$142
Allowed payment amount for Part B services, 30 days pre-bundle	25,691	25,681	$1,965	$2,046	$1,914	$1,989	$5	-$72	$83	-$59	$70
Total allowed payment amount, 30 days post-bundle	20,402	20,680	$4,018	$3,913	$4,116	$4,027	-$15	-$294	$263	-$249	$218
Total allowed payment amount, 90 days post-bundle	19,597	19,835	$11,319	$11,209	$11,786	$11,434	$242	-$477	$960	-$361	$844
Inpatient anchor stay standardized allowed amount	25,881	25,880	$10,718	$10,412	$10,734	$10,401	$28	-$77	$133	-$60	$116
Readmissions standardized allowed amount, 90-day PDP	25,861	25,880	$4,581	$4,591	$4,492	$4,466	$36	-$247	$319	-$202	$274
SNF standardized allowed amount, 90-day PDP	25,861	25,880	$6,153	$5,982	$5,670	$5,985	-$487	-$850	-$124	-$791	-$182
HHA standardized allowed amount, 90-day PDP	25,861	25,880	$1,034	$1,161	$1,060	$1,083	$104	$44	$164	$54	$154
IRF standardized allowed amount, 90-day PDP	25,861	25,880	$601	$637	$675	$727	-$16	-$147	$116	-$126	$95
LTCH standardized allowed amount, 90-day PDP	25,861	25,880	$2,084	$1,570	$2,425	$1,861	$50	-$415	$515	-$340	$440
Therapy standardized allowed amount, 90-day PDP	25,671	25,674	$158	$133	$160	$143	-$8	-$28	$13	-$25	$10
Imaging and laboratory services standardized allowed amount, 90-day PDP	25,671	25,674	$382	$375	$398	$383	$9	-$9	$26	-$6	$23
Procedures standardized allowed amount, 90-day PDP	25,671	25,674	$320	$308	$325	$301	$12	-$9	$33	-$6	$30

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Evaluation and management standardized allowed amount, 90-day PDP	25,671	25,674	$1,560	$1,560	$1,618	$1,606	$11	-$73	$95	-$59	$81
Other institutional services standardized allowed amount, 90-day PDP	25,671	25,674	$634	$786	$681	$859	-$25	-$98	$48	-$86	$36
Other non-institutional services standardized allowed amount, 90-day PDP	25,671	25,674	$612	$578	$603	$587	-$17	-$54	$20	-$48	$14
Anchor inpatient length of stay	26,046	26,046	7.1	6.7	7.1	6.5	0.2	0.0	0.4	0.0	0.3
Number of institutional PAC days, 90-day PDP[1]	10,366	9,553	35.5	33.0	34.7	33.7	-1.5	-2.8	-0.3	-2.6	-0.5
Number of SNF days, 90-day PDP[1]	9,267	8,285	35.2	32.7	34.7	33.9	-1.7	-3.0	-0.3	-2.8	-0.5
Number of HHA visits, 90-day PDP[1]	9,373	8,734	15.7	15.8	15.7	15.4	0.5	-0.2	1.1	-0.1	1.0
Patients discharged to PAC	25,978	25,984	55.5%	54.0%	55.8%	53.5%	0.7	-1.0	2.4	-0.7	2.2
Patients discharged to institutional PAC (of those who received PAC)	14,392	13,490	68.1%	64.1%	66.0%	64.6%	-2.6	-4.8	-0.4	-4.5	-0.8
Emergency department use, 30-day PDP	25,782	25,844	9.4%	10.5%	9.1%	10.5%	-0.3	-1.1	0.6	-1.0	0.5
Emergency department use, 90-day PDP	25,602	25,681	18.9%	20.7%	18.5%	20.5%	-0.3	-1.4	0.8	-1.2	0.7
Unplanned readmission rate, 30-day PDP	25,782	25,844	16.9%	15.4%	16.4%	16.0%	-1.1	-2.1	0.0	-2.0	-0.2
Unplanned readmission rate, 90-day PDP	25,602	25,681	29.3%	27.3%	28.7%	28.1%	-1.5	-2.7	-0.2	-2.5	-0.4
All-cause mortality rate, 30-day PDP	25,385	25,489	14.3%	13.0%	13.7%	12.5%	-0.1	-1.2	1.0	-1.0	0.8
All-cause mortality rate, 90-day PDP	25,209	25,329	22.2%	20.1%	21.7%	20.0%	-0.4	-1.5	0.8	-1.3	0.6
All-cause mortality rate, 120-day PDP	24,219	24,305	24.6%	22.4%	24.1%	22.3%	-0.5	-1.7	0.7	-1.5	0.5

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.28: Diabetes Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,381	1,389	$21,642	$21,623	$20,639	$21,594	-$974	-$2,938	$991	-$2,622	$675
Total allowed payment amount, IP through 120-day PDP	1,310	1,329	$24,666	$24,908	$23,765	$25,080	-$1,073	-$3,372	$1,226	-$3,003	$856
Total amount included in the bundle definition, 90-day episodes	1,381	1,389	$20,478	$20,444	$19,795	$20,561	-$800	-$2,624	$1,024	-$2,331	$731
Total amount not included the bundle, 90-day episodes	1,381	1,389	$1,335	$1,286	$1,036	$1,251	-$264	-$642	$115	-$582	$55
Allowed payment amount for Part B services, 30 days pre-bundle	1,381	1,389	$1,649	$1,600	$1,477	$1,737	-$309	-$530	-$89	-$494	-$124
Total allowed payment amount, 30 days post-bundle	1,256	1,277	$3,465	$3,509	$3,415	$3,700	-$240	-$958	$478	-$842	$362
Total allowed payment amount, 90 days post-bundle	1,179	1,211	$10,389	$11,115	$10,075	$11,046	-$246	-$1,947	$1,455	-$1,673	$1,182
Inpatient anchor stay standardized allowed amount	1,413	1,417	$5,196	$5,373	$5,229	$5,345	$61	-$33	$154	-$18	$139
Readmissions standardized allowed amount, 90-day PDP	1,413	1,417	$4,379	$4,246	$4,187	$4,227	-$174	-$1,050	$701	-$909	$561
SNF standardized allowed amount, 90-day PDP	1,413	1,417	$4,295	$3,956	$3,950	$4,355	-$744	-$1,666	$178	-$1,517	$30
HHA standardized allowed amount, 90-day PDP	1,413	1,417	$1,182	$1,315	$1,184	$1,157	$159	-$40	$358	-$8	$326
Therapy standardized allowed amount, 90-day PDP	1,381	1,389	$99	$70	$106	$121	-$44	-$100	$12	-$91	$3
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,381	1,389	$426	$409	$422	$401	$3	-$52	$59	-$43	$50
Procedures standardized allowed amount, 90-day PDP	1,381	1,389	$381	$312	$334	$357	-$93	-$175	-$11	-$161	-$24
Evaluation and management standardized allowed amount, 90-day PDP	1,381	1,389	$1,584	$1,578	$1,392	$1,519	-$132	-$336	$72	-$303	$39
Other institutional services standardized allowed amount, 90-day PDP	1,381	1,389	$956	$1,029	$775	$1,168	-$320	-$576	-$63	-$535	-$105
Other non-institutional services standardized allowed amount, 90-day PDP	1,381	1,389	$490	$468	$550	$528	-$1	-$117	$116	-$99	$97

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Anchor inpatient length of stay	1,423	1,423	4.3	4.2	4.4	4.3	0.0	-0.3	0.3	-0.2	0.3
Number of institutional PAC days, 90-day PDP[1]	400	383	37.1	31.6	36.3	35.4	-4.6	-9.6	0.4	-8.8	-0.4
Number of SNF days, 90-day PDP[1]	362	342	37.4	30.5	37.1	36.5	-6.3	-11.6	-1.0	-10.8	-1.9
Number of HHA visits, 90-day PDP[1]	615	570	18.0	15.2	17.1	16.1	-1.7	-4.1	0.6	-3.7	0.2
Patients discharged to PAC	1,423	1,422	46.5%	47.4%	46.3%	47.3%	-0.1	-5.2	5.0	-4.3	4.2
Patients discharged to institutional PAC (of those who received PAC)	690	667	42.4%	43.6%	41.2%	43.8%	-1.3	-8.5	5.9	-7.3	4.8
Emergency department use, 30-day PDP	1,373	1,392	12.5%	13.9%	14.6%	15.9%	0.1	-3.2	3.5	-2.7	2.9
Emergency department use, 90-day PDP	1,363	1,386	25.8%	28.0%	26.9%	26.8%	2.3*	-2.7	7.2	-1.9	6.5
Unplanned readmission rate, 30-day PDP	1,373	1,392	15.2%	13.4%	14.5%	13.0%	-0.3	-4.0	3.5	-3.4	2.9
Unplanned readmission rate, 90-day PDP	1,363	1,386	30.5%	26.9%	27.8%	28.4%	-4.2	-8.4	0.0	-7.7	-0.7
All-cause mortality rate, 30-day PDP	1,364	1,379	4.3%	3.3%	3.1%	3.0%	-0.9	-2.9	1.1	-2.5	0.8
All-cause mortality rate, 90-day PDP	1,354	1,373	8.7%	7.9%	7.3%	6.6%	0.0	-2.9	2.9	-2.4	2.5
All-cause mortality rate, 120-day PDP	1,282	1,312	9.7%	10.1%	8.7%	8.1%	0.9	-2.1	4.0	-1.7	3.5

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.29: Simple Pneumonia and Respiratory Infections Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	22,295	22,298	$22,988	$22,469	$22,776	$22,461	-$203	-$714	$307	-$632	$225
Total allowed payment amount, IP through 120-day PDP	21,487	21,493	$25,663	$25,108	$25,385	$25,109	-$278	-$867	$310	-$772	$216
Total amount included in the bundle definition, 30-day episodes	1,973	1,973	$14,927	$14,725	$14,687	$14,446	$39	-$712	$790	-$591	$670
Total amount not included the bundle, 30-day episodes	1,973	1,973	$295	$449	$202	$429	-$72*	-$234	$90	-$208	$64
Total amount included in the bundle definition, 90-day episodes	20,349	20,335	$22,074	$21,356	$21,944	$21,587	-$361	-$854	$132	-$775	$52
Total amount not included the bundle, 90-day episodes	20,349	20,335	$960	$1,135	$928	$988	$116	$6	$226	$24	$208
Allowed payment amount for Part B services, 30 days pre-bundle	22,322	22,308	$1,624	$1,761	$1,543	$1,662	$19	-$42	$80	-$32	$70
Total allowed payment amount, 30 days post-bundle	18,705	18,959	$3,431	$3,349	$3,282	$3,246	-$46	-$245	$153	-$213	$121
Total allowed payment amount, 90 days post-bundle	18,026	18,296	$9,741	$9,526	$9,383	$9,427	-$259	-$731	$214	-$655	$138
Inpatient anchor stay standardized allowed amount	22,454	22,461	$7,098	$6,927	$7,081	$6,934	-$25	-$58	$8	-$52	$3
Readmissions standardized allowed amount, 90-day PDP	22,432	22,461	$3,728	$3,724	$3,655	$3,559	$92	-$131	$315	-$95	$280
SNF standardized allowed amount, 90-day PDP	22,432	22,461	$4,714	$4,503	$4,578	$4,580	-$212	-$502	$78	-$456	$31
HHA standardized allowed amount, 90-day PDP	22,432	22,461	$1,092	$1,229	$1,054	$1,141	$50	-$8	$108	$2	$99
IRF standardized allowed amount, 90-day PDP	22,432	22,461	$448	$515	$415	$465	$18	-$84	$120	-$67	$104
LTCH standardized allowed amount, 90-day PDP	22,432	22,461	$824	$447	$888	$636	-$125	-$365	$114	-$327	$76
Therapy standardized allowed amount, 90-day PDP	22,300	22,298	$140	$120	$140	$128	-$7	-$25	$10	-$22	$7
Imaging and laboratory services standardized allowed amount, 90-day PDP	22,300	22,298	$403	$407	$413	$405	$11	-$4	$27	-$2	$25

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	22,300	22,298	$253	$247	$257	$238	$13	-$4	$30	-$1	$27
Evaluation and management standardized allowed amount, 90-day PDP	22,300	22,298	$1,271	$1,279	$1,262	$1,288	-$19	-$67	$29	-$60	$21
Other institutional services standardized allowed amount, 90-day PDP	22,300	22,298	$603	$779	$608	$733	$51	-$12	$113	-$2	$103
Other non-institutional services standardized allowed amount, 90-day PDP	22,300	22,298	$529	$526	$514	$530	-$20	-$53	$13	-$47	$8
Anchor inpatient length of stay	22,556	22,556	5.8	5.3	5.7	5.3	0.0	-0.1	0.1	-0.1	0.1
Number of institutional PAC days, 90-day PDP[1]	7,376	6,771	32.3	29.1	32.6	30.7	-1.4	-2.8	0.0	-2.5	-0.2
Number of SNF days, 90-day PDP[1]	6,815	6,118	32.7	29.4	33.1	31.4	-1.6	-3.1	-0.1	-2.8	-0.3
Number of HHA visits, 90-day PDP[1]	8,551	8,076	15.4	15.6	14.8	14.7	0.3	-0.2	0.9	-0.2	0.8
Patients discharged to PAC	22,539	22,544	49.4%	49.1%	49.0%	47.6%	1.2	-0.4	2.8	-0.2	2.6
Patients discharged to institutional PAC (of those who received PAC)	11,435	10,608	58.5%	54.7%	58.1%	55.1%	-0.8	-2.9	1.3	-2.6	0.9
Emergency department use, 30-day PDP	22,395	22,414	10.1%	10.7%	10.0%	10.4%	0.2	-0.6	1.1	-0.5	0.9
Emergency department use, 90-day PDP	22,280	22,319	20.1%	21.6%	19.8%	21.0%	0.3	-0.7	1.4	-0.6	1.2
Unplanned readmission rate, 30-day PDP	22,395	22,414	14.9%	13.9%	14.8%	13.7%	0.1	-0.8	1.1	-0.7	1.0
Unplanned readmission rate, 90-day PDP	22,280	22,319	26.9%	25.5%	26.5%	25.2%	0.0	-1.2	1.1	-1.1	1.0
All-cause mortality rate, 30-day PDP	22,086	22,149	10.1%	9.1%	9.7%	8.6%	0.1	-0.7	0.9	-0.6	0.7
All-cause mortality rate, 90-day PDP	21,971	22,057	17.6%	15.7%	17.0%	15.0%	0.1	-0.9	1.0	-0.7	0.9
All-cause mortality rate, 120-day PDP	21,175	21,258	20.5%	18.1%	19.4%	17.2%	-0.2	-1.2	0.9	-1.0	0.7

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, mortality, and total payments not included in the bundle outcomes.

Exhibit I.30: Other Respiratory Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	4,632	4,622	$29,688	$29,695	$29,414	$29,868	-$446	-$1,827	$936	-$1,605	$714
Total allowed payment amount, IP through 120-day PDP	4,448	4,439	$32,952	$33,086	$32,760	$33,284	-$391	-$1,870	$1,089	-$1,632	$851
Total amount included in the bundle definition, 90-day episodes	4,633	4,622	$27,947	$28,017	$27,873	$27,892	$51	-$1,115	$1,216	-$928	$1,029
Total amount not included the bundle, 90-day episodes	4,633	4,622	$996	$1,090	$945	$1,190	-$151	-$381	$78	-$344	$42
Allowed payment amount for Part B services, 30 days pre-bundle	4,633	4,622	$1,873	$1,993	$1,882	$2,018	-$16	-$167	$134	-$143	$110
Total allowed payment amount, 30 days post-bundle	3,765	3,740	$4,067	$4,069	$4,168	$4,155	$14	-$515	$543	-$430	$458
Total allowed payment amount, 90 days post-bundle	3,620	3,568	$11,658	$11,550	$12,500	$11,831	$560	-$737	$1,858	-$529	$1,650
Inpatient anchor stay standardized allowed amount	4,670	4,675	$9,737	$10,189	$9,829	$10,162	$119	-$151	$390	-$108	$347
Readmissions standardized allowed amount, 90-day PDP	4,670	4,675	$5,228	$5,227	$5,084	$5,319	-$236	-$857	$385	-$757	$286
SNF standardized allowed amount, 90-day PDP	4,670	4,675	$4,110	$4,226	$4,248	$4,412	-$48	-$590	$493	-$503	$406
HHA standardized allowed amount, 90-day PDP	4,670	4,675	$1,173	$1,269	$1,186	$1,161	$121	$3	$239	$22	$220
IRF standardized allowed amount, 90-day PDP	4,670	4,675	$845	$595	$683	$683	-$251	-$497	-$5	-$457	-$45
LTCH standardized allowed amount, 90-day PDP	4,670	4,675	$2,488	$1,654	$2,068	$1,653	-$419	-$1,106	$269	-$996	$159
Therapy standardized allowed amount, 90-day PDP	4,633	4,622	$111	$120	$101	$89	$22	-$10	$53	-$5	$48
Imaging and laboratory services standardized allowed amount, 90-day PDP	4,633	4,622	$430	$425	$433	$435	-$7	-$44	$29	-$38	$23
Procedures standardized allowed amount, 90-day PDP	4,633	4,622	$291	$276	$286	$270	$2	-$38	$41	-$31	$35
Evaluation and management standardized allowed amount, 90-day PDP	4,633	4,622	$1,667	$1,627	$1,603	$1,659	-$96	-$223	$31	-$203	$10

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	4,633	4,622	$655	$919	$770	$893	$141	$5	$277	$27	$255
Other non-institutional services standardized allowed amount, 90-day PDP	4,633	4,622	$575	$557	$629	$615	-$4	-$70	$61	-$60	$51
Anchor inpatient length of stay	4,700	4,700	6.2	6.0	6.3	6.0	0.1	-0.2	0.4	-0.2	0.3
Number of institutional PAC days, 90-day PDP[1]	1,512	1,441	31.0	29.3	31.1	30.5	-1.2	-3.6	1.3	-3.2	0.9
Number of SNF days, 90-day PDP[1]	1,330	1,224	31.0	28.8	31.1	30.4	-1.5	-4.1	1.1	-3.7	0.7
Number of HHA visits, 90-day PDP[1]	1,958	1,795	14.7	15.3	14.9	14.5	1.0	0.0	1.9	0.2	1.8
Patients discharged to PAC	4,671	4,679	51.8%	51.4%	51.2%	49.5%	1.3	-2.0	4.6	-1.5	4.1
Patients discharged to institutional PAC (of those who received PAC)	2,456	2,233	56.1%	52.4%	55.9%	53.8%	-1.7	-5.8	2.5	-5.1	1.8
Emergency department use, 30-day PDP	4,630	4,633	10.3%	10.9%	10.4%	11.9%	-0.9	-2.8	1.1	-2.5	0.8
Emergency department use, 90-day PDP	4,601	4,610	21.5%	22.4%	21.5%	23.6%	-1.1	-3.6	1.5	-3.2	1.1
Unplanned readmission rate, 30-day PDP	4,630	4,633	19.4%	17.4%	19.5%	19.5%	-1.9	-4.4	0.5	-4.0	0.1
Unplanned readmission rate, 90-day PDP	4,601	4,610	32.4%	31.8%	33.4%	33.0%	-0.1	-3.0	2.7	-2.5	2.2
All-cause mortality rate, 30-day PDP	4,596	4,575	11.6%	10.7%	11.7%	11.4%	-0.6	-2.5	1.2	-2.2	0.9
All-cause mortality rate, 90-day PDP	4,567	4,553	19.7%	17.7%	19.5%	19.0%	-1.4	-3.7	0.9	-3.3	0.5
All-cause mortality rate, 120-day PDP	4,388	4,374	22.0%	20.1%	21.9%	22.1%	-2.1	-4.5	0.3	-4.1	-0.1

[1] Dependent on having at least one day or visit in the given setting

Exhibit I.31: Gastrointestinal Obstruction Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,712	1,702	$16,882	$17,093	$16,997	$16,597	$610*	-$921	$2,141	-$675	$1,895
Total allowed payment amount, IP through 120-day PDP	1,636	1,630	$19,186	$19,303	$19,455	$19,067	$506*	-$1,288	$2,300	-$999	$2,011
Total amount included in the bundle definition, 90-day episodes	1,712	1,702	$15,741	$15,689	$15,743	$15,464	$227	-$1,099	$1,553	-$886	$1,340
Total amount not included the bundle, 90-day episodes	1,712	1,702	$1,372	$1,578	$1,182	$1,372	$16	-$379	$410	-$315	$347
Allowed payment amount for Part B services, 30 days pre-bundle	1,712	1,702	$1,622	$1,641	$1,560	$1,642	-$62	-$237	$112	-$209	$84
Total allowed payment amount, 30 days post-bundle	1,575	1,560	$2,618	$2,425	$2,629	$2,663	-$227	-$819	$366	-$724	$271
Total allowed payment amount, 90 days post-bundle	1,499	1,495	$7,512	$7,565	$7,391	$8,236	-$792	-$2,280	$696	-$2,041	$457
Inpatient anchor stay standardized allowed amount	1,729	1,731	$5,306	$5,110	$5,314	$5,120	-$2	-$79	$75	-$67	$62
Readmissions standardized allowed amount, 90-day PDP	1,729	1,731	$3,576	$3,872	$3,601	$3,546	$352	-$441	$1,144	-$314	$1,017
SNF standardized allowed amount, 90-day PDP	1,729	1,731	$2,269	$2,138	$2,251	$2,231	-$111	-$672	$450	-$582	$360
HHA standardized allowed amount, 90-day PDP	1,729	1,731	$663	$778	$720	$717	$119	-$12	$249	$9	$228
Therapy standardized allowed amount, 90-day PDP	1,712	1,702	$85	$78	$94	$79	$8	-$29	$44	-$23	$39
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,712	1,702	$427	$461	$447	$415	$66	$6	$126	$16	$116
Procedures standardized allowed amount, 90-day PDP	1,712	1,702	$413	$419	$377	$360	$23	-$50	$96	-$38	$85
Evaluation and management standardized allowed amount, 90-day PDP	1,712	1,702	$1,020	$1,075	$1,078	$1,106	$27	-$99	$152	-$79	$132
Other institutional services standardized allowed amount, 90-day PDP	1,712	1,702	$770	$1,018	$570	$717	$101	-$77	$278	-$49	$250

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	1,712	1,702	$436	$420	$449	$506	-$73	-$180	$34	-$163	$17
Anchor inpatient length of stay	1,735	1,735	4.8	4.5	4.9	4.7	0.0	-0.3	0.2	-0.2	0.2
Number of institutional PAC days, 90-day PDP[1]	263	260	29.7	30.0	31.0	29.3	2.0	-3.1	7.1	-2.3	6.2
Number of SNF days, 90-day PDP[1]	243	242	30.0	30.3	30.0	29.3	1.0	-4.0	6.0	-3.2	5.2
Number of HHA visits, 90-day PDP[1]	459	401	14.2	15.0	14.6	14.3	1.1	-0.9	3.1	-0.6	2.8
Patients discharged to PAC	1,734	1,735	26.6%	26.8%	26.9%	26.5%	0.7	-2.9	4.2	-2.3	3.6
Patients discharged to institutional PAC (of those who received PAC)	476	449	50.9%	41.2%	44.6%	45.4%	-10.5	-19.5	-1.5	-18.1	-3.0
Emergency department use, 30-day PDP	1,716	1,720	8.9%	9.8%	9.9%	10.6%	0.1	-2.8	3.1	-2.3	2.6
Emergency department use, 90-day PDP	1,710	1,716	19.2%	21.6%	20.0%	20.9%	1.4	-2.9	5.8	-2.2	5.1
Unplanned readmission rate, 30-day PDP	1,716	1,720	11.9%	11.1%	12.6%	12.3%	-0.5	-3.3	2.4	-2.9	1.9
Unplanned readmission rate, 90-day PDP	1,710	1,716	21.2%	23.0%	23.8%	22.5%	3.1	-0.6	6.8	0.0	6.2
All-cause mortality rate, 30-day PDP	1,705	1,708	5.9%	3.6%	2.9%	4.2%	-3.7	-5.6	-1.8	-5.3	-2.1
All-cause mortality rate, 90-day PDP	1,699	1,704	9.5%	7.6%	5.9%	7.3%	-3.2	-5.5	-1.0	-5.1	-1.3
All-cause mortality rate, 120-day PDP	1,623	1,631	11.1%	8.5%	8.1%	8.2%	-2.8	-5.3	-0.3	-4.9	-0.7

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.32: Syncope & Collapse Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,339	1,337	$15,799	$16,760	$15,925	$16,981	-$96	-$1,725	$1,534	-$1,463	$1,272
Total allowed payment amount, IP through 120-day PDP	1,288	1,271	$18,187	$19,278	$18,330	$19,383	$38	-$1,906	$1,982	-$1,594	$1,670
Total amount included in the bundle definition, 90-day episodes	1,339	1,337	$15,013	$16,056	$15,141	$16,044	$140	-$1,480	$1,760	-$1,220	$1,500
Total amount not included the bundle, 90-day episodes	1,339	1,337	$935	$986	$874	$1,059	-$133	-$469	$202	-$415	$148
Allowed payment amount for Part B services, 30 days pre-bundle	1,339	1,337	$1,453	$1,739	$1,507	$1,714	$79	-$133	$291	-$98	$257
Total allowed payment amount, 30 days post-bundle	1,279	1,254	$2,484	$2,539	$2,476	$2,320	$212	-$328	$751	-$241	$665
Total allowed payment amount, 90 days post-bundle	1,231	1,189	$7,298	$7,337	$7,445	$7,073	$410	-$893	$1,713	-$684	$1,504
Inpatient anchor stay standardized allowed amount	1,362	1,361	$4,033	$4,384	$4,035	$4,384	$2	-$21	$25	-$17	$22
Readmissions standardized allowed amount, 90-day PDP	1,362	1,361	$2,255	$1,919	$2,568	$2,468	-$236	-$845	$372	-$747	$274
SNF standardized allowed amount, 90-day PDP	1,362	1,361	$3,788	$3,942	$3,479	$4,064	-$431	-$1,408	$546	-$1,251	$389
HHA standardized allowed amount, 90-day PDP	1,362	1,361	$1,190	$1,444	$1,172	$1,311	$116	-$135	$367	-$95	$326
Therapy standardized allowed amount, 90-day PDP	1,339	1,337	$141	$134	$132	$136	-$11	-$71	$48	-$62	$39
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,339	1,337	$451	$416	$474	$446	-$8	-$89	$73	-$76	$60
Procedures standardized allowed amount, 90-day PDP	1,339	1,337	$300	$261	$292	$265	-$12	-$78	$55	-$67	$44
Evaluation and management standardized allowed amount, 90-day PDP	1,339	1,337	$1,097	$1,127	$1,114	$1,130	$14	-$119	$147	-$97	$125
Other institutional services standardized allowed amount, 90-day PDP	1,339	1,337	$556	$885	$622	$791	$160	-$57	$376	-$22	$342

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	1,339	1,337	$364	$374	$396	$392	$15	-$77	$106	-$62	$91
Anchor inpatient length of stay	1,364	1,364	3.6	3.4	3.6	3.5	-0.1	-0.3	0.2	-0.3	0.1
Number of institutional PAC days, 90-day PDP[1]	374	330	34.4	29.3	32.2	31.4	-4.3	-9.1	0.5	-8.3	-0.3
Number of SNF days, 90-day PDP[1]	348	297	35.8	29.7	33.6	33.3	-5.8	-10.9	-0.8	-10.1	-1.6
Number of HHA visits, 90-day PDP[1]	574	548	16.5	15.9	16.5	15.2	0.7	-1.6	3.0	-1.2	2.6
Patients discharged to PAC	1,364	1,364	42.8%	45.6%	41.8%	45.8%	-1.2	-7.4	4.9	-6.4	3.9
Patients discharged to institutional PAC (of those who received PAC)	649	593	46.7%	48.8%	42.0%	45.3%	-1.1	-9.8	7.6	-8.4	6.2
Emergency department use, 30-day PDP	1,338	1,342	10.4%	10.3%	9.1%	10.7%	-1.8	-4.7	1.2	-4.2	0.7
Emergency department use, 90-day PDP	1,336	1,339	21.4%	20.2%	20.5%	22.4%	-3.1	-7.0	0.8	-6.3	0.2
Unplanned readmission rate, 30-day PDP	1,338	1,342	9.2%	9.3%	10.0%	9.2%	0.9*	-1.8	3.6	-1.4	3.1
Unplanned readmission rate, 90-day PDP	1,336	1,339	17.6%	17.9%	20.3%	20.4%	0.2	-3.2	3.6	-2.7	3.1
All-cause mortality rate, 30-day PDP	1,333	1,339	2.3%	1.7%	1.2%	1.6%	-1.1	-2.2	0.1	-2.0	-0.1
All-cause mortality rate, 90-day PDP	1,331	1,336	5.0%	3.6%	4.1%	4.9%	-2.3	-4.5	-0.1	-4.1	-0.5
All-cause mortality rate, 120-day PDP	1,281	1,269	6.2%	4.7%	4.9%	5.9%	-2.6	-4.9	-0.2	-4.5	-0.6

[1] Dependent on having at least one day or visit in the given setting

*This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit I.33: Renal Failure Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	7,356	7,342	$24,471	$23,671	$25,144	$25,012	-$668	-$1,566	$231	-$1,422	$86
Total allowed payment amount, IP through 120-day PDP	6,997	6,965	$27,561	$26,739	$28,338	$28,231	-$715	-$1,781	$351	-$1,610	$180
Total amount included in the bundle definition, 90-day episodes	7,114	7,095	$23,255	$22,300	$23,888	$23,742	-$810	-$1,672	$52	-$1,534	-$87
Total amount not included the bundle, 90-day episodes	7,114	7,095	$1,210	$1,486	$1,336	$1,452	$159	-$33	$352	-$2	$321
Allowed payment amount for Part B services, 30 days pre-bundle	7,359	7,344	$1,755	$1,859	$1,733	$1,866	-$30	-$131	$72	-$115	$55
Total allowed payment amount, 30 days post-bundle	6,125	6,205	$3,836	$3,668	$3,828	$3,836	-$176	-$549	$198	-$489	$138
Total allowed payment amount, 90 days post-bundle	5,804	5,897	$11,035	$10,487	$11,023	$11,143	-$668	-$1,634	$298	-$1,478	$143
Inpatient anchor stay standardized allowed amount	7,440	7,443	$6,642	$6,285	$6,656	$6,311	-$11	-$58	$35	-$50	$27
Readmissions standardized allowed amount, 90-day PDP	7,438	7,443	$4,141	$4,067	$4,314	$4,203	$37	-$362	$436	-$298	$372
SNF standardized allowed amount, 90-day PDP	7,438	7,443	$5,741	$5,488	$5,696	$5,994	-$551	-$1,120	$18	-$1,029	-$74
HHA standardized allowed amount, 90-day PDP	7,438	7,443	$1,185	$1,292	$1,217	$1,277	$47	-$50	$144	-$34	$128
IRF standardized allowed amount, 90-day PDP	7,438	7,443	$634	$677	$745	$909	-$122	-$344	$100	-$308	$64
Therapy standardized allowed amount, 90-day PDP	7,357	7,343	$138	$138	$126	$114	$12	-$20	$44	-$15	$38
Imaging and laboratory services standardized allowed amount, 90-day PDP	7,357	7,343	$423	$407	$435	$414	$5	-$22	$31	-$18	$27
Procedures standardized allowed amount, 90-day PDP	7,357	7,343	$320	$317	$350	$301	$45	$12	$78	$17	$72
Evaluation and management standardized allowed amount, 90-day PDP	7,357	7,343	$1,488	$1,470	$1,584	$1,610	-$44	-$128	$40	-$114	$27

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	7,357	7,343	$714	$848	$748	$936	-$54	-$161	$52	-$144	$35
Other non-institutional services standardized allowed amount, 90-day PDP	7,357	7,343	$542	$558	$540	$539	$17	-$39	$74	-$30	$65
Anchor inpatient length of stay	7,474	7,474	5.2	4.9	5.2	4.9	0.0	-0.2	0.1	-0.2	0.1
Number of institutional PAC days, 90-day PDP[1]	2,800	2,577	35.1	31.1	35.6	33.5	-1.9	-4.1	0.4	-3.8	0.1
Number of SNF days, 90-day PDP[1]	2,585	2,317	35.8	31.4	36.3	34.8	-2.9	-5.4	-0.5	-5.0	-0.9
Number of HHA visits, 90-day PDP[1]	2,989	2,893	16.0	16.0	15.5	15.2	0.2	-0.7	1.1	-0.5	1.0
Patients discharged to PAC	7,466	7,469	52.0%	51.6%	52.7%	51.7%	0.5	-1.8	2.8	-1.5	2.5
Patients discharged to institutional PAC (of those who received PAC)	3,980	3,740	58.1%	57.3%	58.0%	58.7%	-1.6	-4.9	1.8	-4.4	1.3
Emergency department use, 30-day PDP	7,400	7,400	11.7%	12.2%	11.1%	12.4%	-0.8	-2.3	0.6	-2.0	0.4
Emergency department use, 90-day PDP	7,365	7,370	23.0%	24.2%	21.7%	23.6%	-0.6	-2.5	1.3	-2.2	1.0
Unplanned readmission rate, 30-day PDP	7,400	7,400	15.8%	15.9%	16.9%	15.4%	1.6	-0.2	3.4	0.1	3.1
Unplanned readmission rate, 90-day PDP	7,365	7,370	29.4%	28.4%	30.6%	29.0%	0.6	-1.6	2.7	-1.2	2.3
All-cause mortality rate, 30-day PDP	7,327	7,337	9.3%	8.7%	8.7%	8.1%	0.1	-1.4	1.6	-1.1	1.4
All-cause mortality rate, 90-day PDP	7,292	7,308	16.8%	16.1%	15.7%	15.0%	0.0	-1.9	1.9	-1.6	1.6
All-cause mortality rate, 120-day PDP	6,940	6,932	19.2%	18.5%	18.3%	17.5%	0.1	-2.0	2.1	-1.7	1.8

[1] Dependent on having at least one day or visit in the given setting.

Exhibit I.34: Nutritional and Metabolic Disorders Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	2,666	2,660	$20,134	$21,459	$20,883	$21,162	$1,045	-$343	$2,433	-$120	$2,210
Total allowed payment amount, IP through 120-day PDP	2,566	2,534	$22,704	$24,557	$23,814	$23,715	$1,953	$290	$3,616	$558	$3,349
Total amount included in the bundle definition, 90-day episodes	2,613	2,608	$19,047	$20,069	$19,799	$19,967	$854	-$473	$2,181	-$260	$1,968
Total amount not included the bundle, 90-day episodes	2,613	2,608	$1,300	$1,627	$1,311	$1,528	$110	-$171	$391	-$126	$346
Allowed payment amount for Part B services, 30 days pre-bundle	2,667	2,661	$1,814	$1,940	$1,803	$1,938	-$9	-$190	$171	-$161	$142
Total allowed payment amount, 30 days post-bundle	2,260	2,265	$3,116	$3,492	$3,515	$3,091	$800	$259	$1,341	$346	$1,254
Total allowed payment amount, 90 days post-bundle	2,176	2,155	$9,190	$9,459	$9,982	$9,049	$1,203	-$21	$2,426	$176	$2,230
Inpatient anchor stay standardized allowed amount	2,721	2,718	$4,565	$4,745	$4,609	$4,744	$47	-$26	$119	-$14	$107
Readmissions standardized allowed amount, 90-day PDP	2,720	2,718	$3,461	$3,700	$3,656	$3,687	$208	-$386	$801	-$290	$706
SNF standardized allowed amount, 90-day PDP	2,720	2,718	$5,389	$5,546	$5,342	$5,751	-$252	-$1,116	$612	-$977	$473
HHA standardized allowed amount, 90-day PDP	2,720	2,718	$1,075	$1,271	$1,137	$1,172	$161	$20	$302	$42	$280
Therapy standardized allowed amount, 90-day PDP	2,666	2,661	$136	$118	$127	$125	-$16	-$61	$28	-$54	$21
Imaging and laboratory services standardized allowed amount, 90-day PDP	2,666	2,661	$404	$430	$431	$427	$30	-$13	$73	-$6	$66
Procedures standardized allowed amount, 90-day PDP	2,666	2,661	$306	$306	$304	$290	$14	-$42	$71	-$33	$62
Evaluation and management standardized allowed amount, 90-day PDP	2,666	2,661	$1,337	$1,440	$1,348	$1,395	$56	-$67	$180	-$47	$160
Other institutional services standardized allowed amount, 90-day PDP	2,666	2,661	$667	$839	$687	$816	$42	-$116	$201	-$90	$175

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	2,666	2,661	$531	$551	$510	$535	-$4	-$99	$90	-$84	$75
Anchor inpatient length of stay	2,727	2,727	4.3	4.2	4.3	4.2	0.0	-0.2	0.2	-0.1	0.2
Number of institutional PAC days, 90-day PDP[1]	1,006	883	35.0	32.4	35.5	34.0	-1.0	-4.6	2.6	-4.0	2.0
Number of SNF days, 90-day PDP[1]	939	811	35.7	33.2	36.1	35.4	-1.8	-5.6	2.1	-5.0	1.5
Number of HHA visits, 90-day PDP[1]	1,135	1,004	15.2	15.0	14.8	14.3	0.2	-1.4	1.8	-1.1	1.6
Patients discharged to PAC	2,726	2,724	47.5%	50.8%	49.6%	49.9%	3.0	-0.8	6.9	-0.2	6.2
Patients discharged to institutional PAC (of those who received PAC)	1,461	1,306	59.3%	56.2%	53.0%	56.2%	-6.2	-11.5	-1.0	-10.7	-1.8
Emergency department use, 30-day PDP	2,692	2,709	11.2%	12.7%	11.6%	11.8%	1.4	-1.0	3.8	-0.6	3.4
Emergency department use, 90-day PDP	2,685	2,701	22.9%	23.7%	21.7%	23.4%	-1.0	-4.1	2.1	-3.6	1.6
Unplanned readmission rate, 30-day PDP	2,692	2,709	13.8%	13.6%	13.3%	14.2%	-1.2	-3.7	1.3	-3.3	0.9
Unplanned readmission rate, 90-day PDP	2,685	2,701	24.9%	25.1%	25.4%	25.7%	-0.1	-3.2	3.0	-2.7	2.5
All-cause mortality rate, 30-day PDP	2,672	2,687	7.9%	7.0%	7.7%	6.8%	0.0	-1.9	1.9	-1.6	1.6
All-cause mortality rate, 90-day PDP	2,665	2,679	15.6%	14.1%	14.2%	13.9%	-1.1	-3.5	1.3	-3.1	0.9
All-cause mortality rate, 120-day PDP	2,558	2,552	17.7%	16.0%	16.3%	16.3%	-1.7	-4.1	0.7	-3.7	0.3

[1] Dependent on having at least one day or visit in the given setting.

Exhibit I.35: Cellulitis Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	5,370	5,353	$19,467	$19,623	$20,044	$20,678	-$478	-$1,404	$448	-$1,255	$299
Total allowed payment amount, IP through 120-day PDP	5,133	5,084	$22,449	$22,552	$22,899	$23,748	-$746	-$1,863	$372	-$1,684	$192
Total amount included in the bundle definition, 90-day episodes	5,370	5,355	$18,299	$18,531	$18,975	$19,498	-$291	-$1,198	$616	-$1,053	$470
Total amount not included the bundle, 90-day episodes	5,370	5,355	$1,131	$1,263	$1,126	$1,318	-$60	-$271	$151	-$237	$117
Allowed payment amount for Part B services, 30 days pre-bundle	5,370	5,355	$1,243	$1,473	$1,345	$1,452	$122	$22	$222	$38	$206
Total allowed payment amount, 30 days post-bundle	4,993	5,005	$3,194	$3,090	$3,062	$3,156	-$198	-$523	$127	-$471	$75
Total allowed payment amount, 90 days post-bundle	4,737	4,751	$9,315	$9,358	$9,039	$9,658	-$575	-$1,433	$284	-$1,295	$146
Inpatient anchor stay standardized allowed amount	5,458	5,450	$5,216	$5,318	$5,208	$5,308	$3	-$29	$35	-$24	$30
Readmissions standardized allowed amount, 90-day PDP	5,458	5,450	$3,104	$3,211	$3,216	$3,304	$19	-$382	$420	-$318	$355
SNF standardized allowed amount, 90-day PDP	5,458	5,450	$4,213	$4,003	$4,146	$4,486	-$550	-$1,077	-$24	-$993	-$108
HHA standardized allowed amount, 90-day PDP	5,458	5,450	$1,336	$1,496	$1,339	$1,431	$68	-$42	$178	-$24	$160
IRF standardized allowed amount, 90-day PDP	5,458	5,450	$535	$454	$401	$459	-$138	-$320	$44	-$291	$14
Therapy standardized allowed amount, 90-day PDP	5,370	5,355	$107	$111	$127	$121	$9	-$20	$39	-$16	$34
Imaging and laboratory services standardized allowed amount, 90-day PDP	5,370	5,355	$385	$378	$393	$385	$1	-$29	$32	-$24	$27
Procedures standardized allowed amount, 90-day PDP	5,370	5,355	$334	$324	$313	$324	-$21	-$64	$21	-$57	$14
Evaluation and management standardized allowed amount, 90-day PDP	5,370	5,355	$1,294	$1,299	$1,379	$1,436	-$53	-$140	$35	-$126	$21
Other institutional services standardized allowed amount, 90-day PDP	5,370	5,355	$673	$925	$748	$987	$12	-$116	$139	-$95	$119

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	5,370	5,355	$434	$444	$471	$514	-$32	-$98	$34	-$88	$23
Anchor inpatient length of stay	5,474	5,474	5.0	4.8	4.9	4.8	0.0	-0.2	0.2	-0.2	0.1
Number of institutional PAC days, 90-day PDP[1]	1,579	1,481	33.4	29.9	34.1	33.1	-2.5	-5.2	0.2	-4.7	-0.3
Number of SNF days, 90-day PDP[1]	1,443	1,337	33.8	30.3	34.8	33.7	-2.3	-5.1	0.4	-4.6	0.0
Number of HHA visits, 90-day PDP[1]	2,459	2,322	17.7	17.9	17.7	17.9	-0.1	-1.3	1.1	-1.1	0.9
Patients discharged to PAC	5,473	5,473	51.2%	50.3%	49.3%	48.4%	0.1	-2.7	2.8	-2.3	2.4
Patients discharged to institutional PAC (of those who received PAC)	2,806	2,620	46.9%	45.6%	43.9%	43.7%	-1.1	-5.3	3.0	-4.6	2.3
Emergency department use, 30-day PDP	5,383	5,400	12.3%	11.5%	11.4%	11.9%	-1.2	-2.9	0.4	-2.6	0.2
Emergency department use, 90-day PDP	5,367	5,378	23.2%	24.1%	22.0%	24.3%	-1.4	-3.5	0.7	-3.2	0.3
Unplanned readmission rate, 30-day PDP	5,383	5,400	11.6%	11.1%	12.7%	11.8%	0.4	-1.4	2.2	-1.1	1.9
Unplanned readmission rate, 90-day PDP	5,367	5,378	24.1%	23.7%	25.6%	24.8%	0.4	-2.0	2.8	-1.6	2.4
All-cause mortality rate, 30-day PDP	5,351	5,372	2.4%	2.5%	2.4%	2.4%	0.1	-0.8	1.0	-0.6	0.9
All-cause mortality rate, 90-day PDP	5,336	5,350	6.2%	6.1%	6.2%	5.4%	0.7	-0.6	2.0	-0.4	1.8
All-cause mortality rate, 120-day PDP	5,098	5,088	7.8%	7.2%	7.5%	6.7%	0.1	-1.3	1.6	-1.1	1.4

[1] Dependent on having at least one day or visit in the given setting.

Exhibit I.36: Transient Ischemia Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,086	1,085	$14,995	$14,824	$14,265	$16,635	-$2,541	-$4,383	-$699	-$4,087	-$995
Total allowed payment amount, IP through 120-day PDP	1,047	1,052	$16,971	$16,679	$16,554	$19,140	-$2,878	-$5,236	-$519	-$4,857	-$898
Total amount included in the bundle definition, 90-day episodes	1,087	1,086	$13,995	$14,004	$13,535	$15,517	-$1,973	-$3,506	-$441	-$3,259	-$687
Total amount not included the bundle, 90-day episodes	1,087	1,086	$878	$996	$801	$1,008	-$89	-$487	$308	-$423	$245
Allowed payment amount for Part B services, 30 days pre-bundle	1,087	1,086	$1,275	$1,547	$1,263	$1,581	-$45	-$292	$202	-$253	$162
Total allowed payment amount, 30 days post-bundle	1,035	1,048	$2,054	$1,905	$2,290	$2,492	-$351	-$1,076	$374	-$959	$257
Total allowed payment amount, 90 days post-bundle	996	1,011	$6,093	$6,139	$6,343	$7,750	-$1,362	-$3,100	$377	-$2,821	$97
Inpatient anchor stay standardized allowed amount	1,098	1,095	$4,138	$4,139	$4,141	$4,138	$4	-$16	$25	-$13	$21
Readmissions standardized allowed amount, 90-day PDP	1,098	1,095	$2,139	$1,717	$1,885	$2,122	-$659	-$1,320	$3	-$1,214	-$104
SNF standardized allowed amount, 90-day PDP	1,098	1,095	$2,879	$2,986	$2,660	$3,762	-$995	-$1,922	-$69	-$1,773	-$218
HHA standardized allowed amount, 90-day PDP	1,098	1,095	$1,029	$1,283	$1,068	$1,245	$76	-$156	$309	-$119	$271
Therapy standardized allowed amount, 90-day PDP	1,087	1,086	$172	$160	$168	$174	-$19	-$94	$56	-$82	$44
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,087	1,086	$449	$419	$485	$514	-$59	-$129	$12	-$118	$0
Procedures standardized allowed amount, 90-day PDP	1,087	1,086	$246	$204	$228	$232	-$46	-$113	$21	-$102	$10
Evaluation and management standardized allowed amount, 90-day PDP	1,087	1,086	$1,040	$992	$986	$1,183	-$244	-$408	-$79	-$382	-$105
Other institutional services standardized allowed amount, 90-day PDP	1,087	1,086	$450	$629	$467	$679	-$33	-$216	$150	-$187	$120

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	1,087	1,086	$315	$363	$325	$362	$11	-$82	$104	-$67	$89
Anchor inpatient length of stay	1,099	1,099	3.3	3.2	3.4	3.3	0.0	-0.2	0.2	-0.2	0.1
Number of institutional PAC days, 90-day PDP[1]	247	233	31.2	29.1	31.2	34.2	-5.1	-11.0	0.7	-10.0	-0.2
Number of SNF days, 90-day PDP[1]	212	199	33.0	31.2	32.6	36.3	-5.5	-12.0	0.9	-11.0	-0.1
Number of HHA visits, 90-day PDP[1]	398	396	15.3	15.7	16.0	15.8	0.6	-1.4	2.5	-1.1	2.2
Patients discharged to PAC	1,098	1,099	34.8%	38.3%	35.4%	38.9%	-0.1	-5.0	4.8	-4.2	4.0
Patients discharged to institutional PAC (of those who received PAC)	430	422	45.5%	46.4%	39.9%	43.8%	-3.0	-12.4	6.4	-10.9	4.9
Emergency department use, 30-day PDP	1,085	1,089	8.7%	10.5%	9.5%	11.0%	0.4	-3.3	4.0	-2.7	3.5
Emergency department use, 90-day PDP	1,085	1,086	19.4%	22.6%	20.3%	21.4%	2.1	-2.5	6.6	-1.8	5.9
Unplanned readmission rate, 30-day PDP	1,085	1,089	9.3%	7.6%	7.7%	7.1%	-1.1*	-4.3	2.2	-3.8	1.7
Unplanned readmission rate, 90-day PDP	1,085	1,086	18.2%	16.5%	17.5%	17.5%	-1.7	-5.9	2.5	-5.2	1.8
All-cause mortality rate, 30-day PDP	1,082	1,085	0.8%	1.6%	0.5%	1.0%	0.4	-0.7	1.4	-0.5	1.2
All-cause mortality rate, 90-day PDP	1,082	1,082	3.6%	3.1%	2.3%	2.9%	-1.0	-3.1	1.0	-2.8	0.7
All-cause mortality rate, 120-day PDP	1,043	1,049	4.2%	3.4%	3.0%	4.0%	-1.8	-4.1	0.6	-3.8	0.2

Exhibit I.37: Esophagitis, Gastroenteritis and Other Digestive Disorders Episodes, Model 2 ACH, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	4,001	3,984	$16,511	$16,618	$16,084	$17,003	-$813	-$1,836	$210	-$1,672	$46
Total allowed payment amount, IP through 120-day PDP	3,844	3,826	$19,040	$19,217	$18,617	$19,712	-$918	-$2,127	$292	-$1,933	$97
Total amount included in the bundle definition, 90-day episodes	4,001	3,984	$15,384	$15,518	$15,116	$15,954	-$705	-$1,660	$250	-$1,506	$96
Total amount not included the bundle, 90-day episodes	4,001	3,984	$1,243	$1,272	$1,217	$1,294	-$48	-$268	$172	-$233	$137
Allowed payment amount for Part B services, 30 days pre-bundle	4,001	3,984	$1,660	$1,824	$1,654	$1,826	-$8	-$138	$122	-$117	$101
Total allowed payment amount, 30 days post-bundle	3,722	3,733	$2,718	$2,723	$2,699	$2,846	-$142	-$483	$199	-$428	$144
Total allowed payment amount, 90 days post-bundle	3,565	3,567	$7,949	$7,913	$7,802	$8,293	-$526	-$1,431	$379	-$1,286	$233
Inpatient anchor stay standardized allowed amount	4,093	4,092	$4,432	$4,637	$4,462	$4,646	$21	-$8	$50	-$4	$46
Readmissions standardized allowed amount, 90-day PDP	4,093	4,092	$3,432	$3,471	$3,308	$3,355	-$7	-$503	$488	-$423	$409
SNF standardized allowed amount, 90-day PDP	4,093	4,092	$2,410	$2,158	$1,994	$2,573	-$832	-$1,234	-$429	-$1,169	-$494
HHA standardized allowed amount, 90-day PDP	4,093	4,092	$847	$917	$858	$840	$89	-$9	$186	$7	$171
Therapy standardized allowed amount, 90-day PDP	4,001	3,984	$84	$84	$79	$85	-$7	-$32	$19	-$28	$15
Imaging and laboratory services standardized allowed amount, 90-day PDP	4,001	3,984	$519	$504	$542	$517	$11	-$30	$51	-$23	$45
Procedures standardized allowed amount, 90-day PDP	4,001	3,984	$421	$412	$431	$399	$23	-$34	$80	-$25	$71
Evaluation and management standardized allowed amount, 90-day PDP	4,001	3,984	$1,203	$1,236	$1,241	$1,269	$6	-$95	$107	-$79	$91
Other institutional services standardized allowed amount, 90-day PDP	4,001	3,984	$767	$945	$771	$970	-$22	-$151	$107	-$130	$86

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	4,001	3,984	$430	$466	$498	$506	$28	-$43	$99	-$31	$88
Anchor inpatient length of stay	4,104	4,104	4.2	4.0	4.2	4.1	-0.1	-0.2	0.1	-0.2	0.1
Number of institutional PAC days, 90-day PDP[1]	729	598	30.9	27.1	29.4	31.7	-6.1	-9.3	-2.9	-8.8	-3.4
Number of SNF days, 90-day PDP[1]	653	523	31.4	28.2	29.8	33.2	-6.5	-10.0	-3.1	-9.4	-3.7
Number of HHA visits, 90-day PDP[1]	1,250	1,080	14.7	15.1	15.1	14.4	1.1	-0.3	2.5	-0.1	2.3
Patients discharged to PAC	4,104	4,103	31.0%	30.4%	27.3%	26.9%	-0.2	-2.6	2.3	-2.2	1.9
Patients discharged to institutional PAC (of those who received PAC)	1,280	1,058	42.6%	38.4%	37.3%	40.6%	-7.5	-11.8	-3.2	-11.2	-3.9
Emergency department use, 30-day PDP	4,045	4,047	12.7%	14.1%	12.4%	13.7%	0.0	-2.1	2.0	-1.7	1.7
Emergency department use, 90-day PDP	4,034	4,035	24.1%	26.1%	23.9%	26.0%	0.0	-2.6	2.5	-2.1	2.1
Unplanned readmission rate, 30-day PDP	4,045	4,047	12.7%	12.8%	13.0%	12.8%	0.3	-1.8	2.4	-1.4	2.1
Unplanned readmission rate, 90-day PDP	4,034	4,035	24.7%	23.7%	24.1%	23.9%	-0.7	-3.3	1.8	-2.9	1.4
All-cause mortality rate, 30-day PDP	4,026	4,025	2.5%	2.4%	2.6%	2.9%	-0.4	-1.4	0.6	-1.2	0.5
All-cause mortality rate, 90-day PDP	4,015	4,013	6.2%	5.8%	5.4%	5.3%	-0.3	-1.9	1.2	-1.6	1.0
All-cause mortality rate, 120-day PDP	3,858	3,856	7.5%	7.1%	6.6%	6.1%	0.1	-1.5	1.7	-1.2	1.4

[1] Dependent on having at least one day or visit in the given setting.

Appendix J: Groups of Model 2 Clinical Episodes Based on Shared Characteristics with Implications for Cost Saving Strategies

Exhibit J.1: Groups of Clinical Episodes Based on Shared Characteristics with Implications for Cost Saving Strategies, Model 2, Q4 2013 – Q3 2016

Group	Clinical Episodes	Hypothesis
High proportion of total baseline episode payments driven by PAC (top 10 episodes)	Fractures of the femur and hip or pelvis (61%) Hip & femur procedures except major joint (53%) Medical non-infectious orthopedic (50%) Stroke (49%) Lower extremity and humerus procedure except hip, foot, femur (43%) Urinary tract infection (39%) Major joint replacement of the lower extremity (34%) Nutritional and metabolic disorders (32%) Syncope and collapse (32%) Sepsis (31%)	We might expect to see these clinical episodes exhibit the greatest reductions in PAC utilization and costs as PAC accounts for a larger proportion of costs compared to clinical episodes not within this grouping.
High proportion of total baseline episode payments driven by the anchor inpatient stay (>40%)	Cardiac valve (63%) Coronary artery bypass graft (61%) Spinal fusion (non-cervical) (58%) Percutaneous coronary intervention (53%) Major joint replacement of the upper extremity (52%) Cervical spinal fusion (50%) Revision of the hip or knee (50%) Major bowel procedure (48%) Major joint replacement of the lower extremity (44%)	We might expect to see a reduction in the inpatient length of stay as a strategy to reduce costs as this accounts for a larger proportion of costs compared to clinical episodes not within this grouping.
Chronic episodes	Cardiac arrhythmia Cardiac valve Congestive heart failure Chronic obstructive pulmonary disease Coronary artery bypass graft Medical non-infectious orthopedic Nutritional and metabolic disorders Other respiratory Renal failure Spinal fusion	We might expect to see efforts to reduce readmissions and reduce duplicate tests and procedures as these are more often concerns in chronic conditions.
Planned episodes	Cardiac valve Coronary artery bypass graft (non-emergent) Hip and femur procedures except major joint Major bowel procedure Major joint replacement of the lower extremity (non-fracture) Medical non-infectious orthopedic Percutaneous coronary intervention Revision of the hip or knee Spinal fusion (non-cervical)	We might expect to see a change in patient mix as participants have more opportunities to prepare and plan for episode of care.

Note: These groupings of clinical episodes are not mutually exclusive. Any given clinical episode may show up in any combination of groupings, and some clinical episodes are not included in any group (these include acute myocardial infarction; esophagitis, gastroenteritis, and other digestive disorders; and gastrointestinal hemorrhage). Clinical episodes are listed in decreasing order for groupings based on costs during the baseline period. For the high PAC costs in the baseline group, we arbitrarily selected 10 as the number of episodes with the highest proportion of costs due to PAC in the baseline to include in this group. Likewise, the cutoff of 40% for including episodes in the high proportion of costs occurring during the anchor inpatient stay grouping was arbitrary.

Appendix K: Impact of BPCI on Allowed Payment, Quality, and Utilization Measures, by Clinical Episode, Baseline to Intervention, Model 3 SNF

The following exhibits display risk-adjusted difference-in-differences results for all payment, quality, and utilization measures assessed in the Year 4 annual report. Results are presented by EI type/clinical episode. Please observe the following abbreviations, which are used throughout the appendix:

- DiD = difference-in-differences
- LCI = lower confidence interval at the 5% and 10% level
- UCI = upper confidence interval at the 5% and 10% level
- PDP = post-qualifying hospitalization discharge period
- IP = inpatient hospitalizations
- PAC = post-acute care
- SNF = skilled nursing facility
- HHA = home health agency
- IRF = inpatient rehabilitation facility

Note that sample sizes reflect the number of episodes initiated during the intervention period that met inclusion criteria for the given outcome. Medicare payments are risk-adjusted and standardized to remove the effect of geographic differences in wages, extra amounts to account for teaching programs and other policy factors. Results reflect Lewin analysis of Medicare claims data for episodes that began Q4 2011 through Q3 2012 (baseline) and Q4 2013 through Q3 2016 (intervention period) for BPCI episode initiators and the matched comparison providers.

Exhibit K.1: Urinary Tract Infection Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,795	1,787	$36,299	$35,969	$35,359	$36,781	-$1,752	-$3,388	-$115	-$3,125	-$378
Total allowed payment amount, IP through 120-day PDP	1,730	1,715	$39,978	$40,071	$39,098	$40,458	-$1,268	-$3,168	$632	-$2,862	$327
Total amount included in the bundle definition, 30-day episodes	153	148	$12,806	$13,721	$13,791	$14,705	$1	-$1,625	$1,628	-$1,364	$1,366
Total amount included in the bundle definition, 60-day episodes	200	195	$21,953	$21,973	$21,537	$21,518	$38	-$2,800	$2,876	-$2,344	$2,420
Total amount not included the bundle, 60-day episodes	200	195	$540	$784	$490	$845	-$111	-$925	$704	-$794	$573
Total amount included in the bundle definition, 90-day episodes	1,443	1,442	$28,985	$28,408	$27,082	$28,746	-$2,241	-$4,015	-$466	-$3,730	-$751
Total amount not included the bundle, 90 day episodes	1,443	1,442	$867	$1,014	$984	$974	$157	-$197	$511	-$140	$454
Total allowed payment amount, 30 days pre-bundle	1,796	1,784	$13,670	$12,916	$12,907	$12,648	-$495	-$1,466	$475	-$1,310	$319
Total allowed payment amount, 30 days post-bundle	1,543	1,539	$4,951	$5,019	$5,390	$4,877	$581	-$90	$1,252	$18	$1,145
Total allowed payment amount, 90 days post-bundle	1,522	1,523	$13,772	$13,292	$13,972	$13,343	$149	-$1,426	$1,725	-$1,173	$1,472
Readmissions standardized allowed amount, 90-day PDP	1,812	1,812	$4,374	$4,159	$4,593	$4,091	$287	-$470	$1,044	-$349	$922
SNF standardized allowed amount, 90-day PDP	1,812	1,812	$19,424	$18,840	$18,509	$20,133	-$2,208	-$3,408	-$1,008	-$3,215	-$1,201
HHA standardized allowed amount, 90-day PDP	1,812	1,812	$1,362	$1,675	$1,310	$1,518	$106	-$89	$300	-$58	$269
Therapy standardized allowed amount, 90-day PDP	1,795	1,788	$177	$163	$193	$124	$55	-$16	$125	-$4	$114
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,795	1,788	$287	$302	$313	$281	$47	$12	$82	$18	$76

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	1,795	1,788	$207	$235	$232	$190	$69	$17	$121	$26	$113
Evaluation and management standardized allowed amount, 90-day PDP	1,795	1,788	$1,881	$2,002	$1,843	$1,975	-$11	-$176	$154	-$150	$128
Other institutional services standardized allowed amount, 90-day PDP	1,795	1,788	$350	$571	$381	$473	$129	$16	$242	$34	$224
Other non-institutional services standardized allowed amount, 90-day PDP	1,795	1,788	$715	$668	$708	$652	$9	-$63	$81	-$51	$69
Qualifying inpatient length of stay	1,813	1,813	5.6	5.3	5.5	5.2	0.0	-0.2	0.2	-0.2	0.2
Number of institutional PAC days, 90-day PDP	1,812	1,810	39.8	36.0	39.0	38.9	-3.6	-6.0	-1.3	-5.6	-1.7
Number of SNF days, 90-day PDP	1,812	1,810	39.3	35.6	38.6	38.3	-3.4	-5.7	-1.0	-5.3	-1.4
Number of HHA visits, 90-day PDP1	905	839	14.2	15.5	13.9	15.2	0.1	-1.2	1.4	-1.0	1.2
Emergency department use, first 30 days of episode	1,805	1,804	9.5%	9.5%	10.6%	10.6%	-0.1	-3.1	2.9	-2.6	2.4
Emergency department use, first 90 days of episode	1,804	1,804	21.4%	23.7%	22.5%	24.7%	0.1	-4.2	4.3	-3.5	3.6
Unplanned readmission rate, first 30 days of episode	1,805	1,804	16.9%	13.5%	16.2%	13.8%	-1.1	-4.5	2.4	-3.9	1.8
Unplanned readmission rate, first 90 days of episode	1,804	1,804	32.8%	30.8%	32.9%	29.3%	1.5	-2.8	5.8	-2.1	5.1
All-cause mortality rate, first 30 days of episode	1,789	1,785	7.0%	5.0%	7.4%	5.7%	-0.3	-2.7	2.1	-2.4	1.7
All-cause mortality rate, first 90 days of episode	1,788	1,785	17.0%	15.2%	17.2%	14.6%	0.9*	-2.7	4.5	-2.1	3.9
All-cause mortality rate, first 120 days of episode	1,718	1,711	20.3%	18.4%	20.2%	16.9%	1.4*	-2.5	5.3	-1.9	4.6

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit K.2: Stroke Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,211	1,207	$45,627	$48,146	$46,824	$47,517	$1,826	-$922	$4,575	-$481	$4,133
Total allowed payment amount, IP through 120-day PDP	1,167	1,159	$50,089	$52,899	$51,377	$52,075	$2,112	-$1,168	$5,392	-$641	$4,864
Total amount included in the bundle definition, 60-day episodes	166	166	$23,963	$24,865	$25,345	$25,328	$920	-$2,949	$4,789	-$2,328	$4,167
Total amount included in the bundle definition, 90-day episodes	1,028	1,025	$32,399	$33,563	$31,774	$32,976	-$38	-$2,393	$2,318	-$2,015	$1,939
Total amount not included the bundle, 90 day episodes	1,028	1,025	$601	$835	$841	$741	$335	-$45	$715	$16	$654
Total allowed payment amount, 30 days pre-bundle	1,211	1,207	$17,664	$18,928	$18,488	$18,877	$876	-$739	$2,491	-$479	$2,232
Total allowed payment amount, 30 days post-bundle	1,031	1,000	$5,501	$5,379	$5,765	$5,356	$288	-$675	$1,250	-$520	$1,096
Total allowed payment amount, 90 days post-bundle	1,018	989	$14,485	$13,649	$13,717	$13,353	-$473	-$2,686	$1,741	-$2,330	$1,385
Readmissions standardized allowed amount, 90-day PDP	1,215	1,214	$3,767	$4,410	$4,586	$3,814	$1,415	$459	$2,371	$612	$2,217
SNF standardized allowed amount, 90-day PDP	1,215	1,214	$22,729	$22,738	$21,410	$23,229	-$1,810	-$3,608	-$12	-$3,319	-$301
HHA standardized allowed amount, 90-day PDP	1,215	1,214	$1,428	$1,723	$1,489	$1,542	$242	-$13	$497	$28	$456
IRF standardized allowed amount, 90-day PDP	1,215	1,214	$3,328	$4,477	$3,850	$4,752	$247	-$913	$1,407	-$726	$1,221
Therapy standardized allowed amount, 90-day PDP	1,211	1,208	$130	$148	$183	$130	$71	-$5	$147	$7	$135
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,211	1,208	$286	$331	$336	$300	$81	$34	$129	$41	$121
Procedures standardized allowed amount, 90-day PDP	1,211	1,208	$178	$193	$238	$176	$76	$14	$138	$24	$128

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Evaluation and management standardized allowed amount, 90-day PDP	1,211	1,208	$2,071	$2,531	$2,183	$2,233	$410	$166	$655	$205	$615
Other institutional services standardized allowed amount, 90-day PDP	1,211	1,208	$360	$452	$408	$443	$56	-$77	$189	-$56	$168
Other non-institutional services standardized allowed amount, 90-day PDP	1,211	1,208	$701	$705	$658	$575	$86	$3	$170	$16	$157
Qualifying inpatient length of stay	1,215	1,215	6.5	6.2	6.7	6.2	0.2	-0.2	0.5	-0.1	0.4
Number of institutional PAC days, 90-day PDP	1,214	1,213	46.4	44.7	45.4	46.0	-2.3	-5.8	1.1	-5.2	0.6
Number of SNF days, 90-day PDP	1,214	1,213	43.5	41.1	41.8	42.2	-2.9	-6.1	0.3	-5.6	-0.2
Number of HHA visits, 90-day PDP[1]	576	530	14.0	15.0	14.3	14.3	1.0	-0.4	2.4	-0.2	2.2
Emergency department use, first 30 days of episode	1,208	1,209	11.1%	13.4%	12.1%	11.2%	3.1	-0.5	6.8	0.1	6.2
Emergency department use, first 90 days of episode	1,208	1,209	23.7%	26.7%	25.5%	23.2%	5.3	0.6	10.0	1.3	9.2
Unplanned readmission rate, first 30 days of episode	1,208	1,209	17.3%	17.6%	15.7%	16.0%	-0.1	-4.5	4.3	-3.8	3.6
Unplanned readmission rate, first 90 days of episode	1,208	1,209	28.9%	31.5%	31.9%	27.5%	6.9	1.7	12.2	2.5	11.3
All-cause mortality rate, first 30 days of episode	1,211	1,207	9.5%	6.7%	8.7%	8.3%	-2.3	-5.6	1.0	-5.1	0.4
All-cause mortality rate, first 90 days of episode	1,211	1,207	19.4%	15.4%	18.5%	17.1%	-2.6	-7.1	1.9	-6.3	1.2
All-cause mortality rate, first 120 days of episode	1,153	1,153	22.5%	19.2%	21.1%	19.8%	-1.9	-6.6	2.7	-5.9	2.0

[1] Dependent on having at least one day or visit in the given setting

Exhibit K.3: Chronic Obstructive Pulmonary Disease, Bronchitis, Asthma Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	820	815	$37,877	$39,046	$37,199	$36,567	$1,802	-$1,084	$4,688	-$620	$4,224
Total allowed payment amount, IP through 120-day PDP	801	792	$42,627	$44,050	$41,773	$41,018	$2,178	-$1,268	$5,623	-$714	$5,069
Total amount included in the bundle definition, 30-day episodes	31	31	$12,363	$12,695	$13,232	$14,168	-$603	-$3,890	$2,683	-$3,361	$2,155
Total amount included in the bundle definition, 60-day episodes	56	56	$22,294	$23,313	$20,606	$21,898	-$272	-$6,894	$6,350	-$5,830	$5,286
Total amount included in the bundle definition, 90-day episodes	733	728	$28,497	$29,118	$28,495	$27,222	$1,895	-$788	$4,578	-$357	$4,147
Total amount not included the bundle, 90 day episodes	733	728	$575	$1,257	$837	$849	$671	$131	$1,210	$218	$1,123
Total allowed payment amount, 30 days pre-bundle	820	815	$15,270	$14,495	$14,539	$14,316	-$552	-$2,134	$1,029	-$1,880	$775
Total allowed payment amount, 30 days post-bundle	655	687	$6,093	$6,119	$5,641	$5,548	$120	-$1,146	$1,385	-$943	$1,182
Total allowed payment amount, 90 days post-bundle	643	683	$16,613	$16,654	$15,522	$15,474	$90	-$2,960	$3,140	-$2,470	$2,650
Readmissions standardized allowed amount, 90-day PDP	826	826	$6,405	$6,785	$6,462	$5,923	$918	-$488	$2,324	-$262	$2,098
SNF standardized allowed amount, 90-day PDP	826	826	$16,269	$16,423	$16,380	$15,976	$557	-$1,207	$2,322	-$924	$2,038
HHA standardized allowed amount, 90-day PDP	826	826	$1,619	$1,755	$1,483	$1,642	-$23	-$295	$249	-$251	$205
Imaging and laboratory services standardized allowed amount, 90-day PDP	820	815	$368	$374	$367	$350	$23	-$36	$82	-$27	$72
Procedures standardized allowed amount, 90-day PDP	820	815	$231	$289	$258	$197	$119	$39	$199	$52	$186
Evaluation and management standardized allowed amount, 90-day PDP	820	815	$2,455	$2,818	$2,348	$2,347	$366	$67	$664	$115	$616

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other institutional services standardized allowed amount, 90-day PDP	820	815	$457	$563	$463	$546	$22	-$154	$199	-$126	$171
Other non-institutional services standardized allowed amount, 90-day PDP	820	815	$755	$786	$795	$677	$150	$42	$257	$59	$240
Qualifying inpatient length of stay	826	826	6.5	6.4	6.3	6.3	-0.2	-0.6	0.2	-0.5	0.2
Number of institutional PAC days, 90-day PDP	825	825	34.3	32.0	35.5	31.2	2.0	-1.4	5.4	-0.8	4.9
Number of SNF days, 90-day PDP	825	825	33.4	31.2	35.0	30.6	2.2	-1.2	5.6	-0.6	5.1
Number of HHA visits, 90-day PDP[1]	485	438	14.3	14.5	14.3	14.2	0.2	-1.7	2.1	-1.4	1.8
Emergency department use, first 30 days of episode	816	820	8.0%	11.0%	11.2%	9.5%	4.7	0.6	8.8	1.3	8.2
Emergency department use, first 90 days of episode	816	820	22.2%	26.3%	22.6%	22.4%	4.2	-1.9	10.3	-0.9	9.3
Unplanned readmission rate, first 30 days of episode	816	820	22.6%	22.5%	23.0%	20.3%	2.6	-3.2	8.4	-2.3	7.5
Unplanned readmission rate, first 90 days of episode	816	820	43.1%	45.2%	42.1%	39.5%	4.7	-2.1	11.5	-1.0	10.4
All-cause mortality rate, first 30 days of episode	816	818	6.7%	7.5%	8.8%	8.2%	1.5*	-2.3	5.2	-1.7	4.6
All-cause mortality rate, first 90 days of episode	816	818	17.4%	19.9%	19.4%	16.1%	5.7	0.7	10.8	1.5	10.0
All-cause mortality rate, first 120 days of episode	795	795	21.6%	23.3%	22.3%	19.5%	4.4	-1.3	10.1	-0.3	9.2

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit K.4: Major Joint Replacement of the Lower Extremity Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	5,673	5,694	$34,696	$33,952	$33,846	$34,833	-$1,731	-$2,712	-$751	-$2,554	-$909
Total allowed payment amount, IP through 120-day PDP	5,354	5,388	$36,685	$35,900	$35,575	$36,650	-$1,859	-$2,991	-$727	-$2,809	-$909
Total amount included in the bundle definition, 30-day episodes	560	560	$10,786	$11,280	$11,634	$12,242	-$114	-$1,211	$983	-$1,035	$806
Total amount included in the bundle definition, 60-day episodes	1,567	1,570	$15,724	$15,071	$15,701	$16,499	-$1,452	-$2,770	-$134	-$2,558	-$346
Total amount not included the bundle, 60-day episodes	1,567	1,570	$211	$216	$153	$164	-$5	-$171	$162	-$144	$135
Total amount included in the bundle definition, 90-day episodes	3,550	3,559	$19,675	$18,584	$18,594	$18,891	-$1,388	-$2,563	-$213	-$2,374	-$402
Total amount not included the bundle, 90 day episodes	3,550	3,559	$408	$408	$370	$399	-$28	-$168	$111	-$146	$89
Total allowed payment amount, 30 days pre-bundle	5,677	5,689	$17,111	$17,269	$16,808	$17,300	-$334	-$698	$29	-$639	-$29
Total allowed payment amount, 30 days post-bundle	5,525	5,506	$2,367	$2,224	$2,159	$2,263	-$246	-$539	$46	-$492	-$1
Total allowed payment amount, 90 days post-bundle	5,492	5,459	$6,351	$5,684	$5,883	$5,858	-$643	-$1,300	$15	-$1,195	-$91
Readmissions standardized allowed amount, 90-day PDP	5,706	5,711	$1,916	$1,873	$1,742	$1,951	-$252	-$595	$90	-$540	$35
SNF standardized allowed amount, 90-day PDP	5,706	5,711	$12,722	$11,456	$12,156	$12,758	-$1,867	-$2,583	-$1,152	-$2,468	-$1,267
HHA standardized allowed amount, 90-day PDP	5,706	5,711	$1,947	$2,305	$1,860	$1,831	$387	$234	$539	$259	$515
Therapy standardized allowed amount, 90-day PDP	5,673	5,694	$553	$545	$579	$556	$15	-$39	$68	-$31	$60
Imaging and laboratory services standardized allowed amount, 90-day PDP	5,673	5,694	$293	$270	$287	$262	$2	-$20	$24	-$16	$20

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	5,673	5,694	$277	$281	$265	$282	-$13	-$48	$23	-$42	$17
Evaluation and management standardized allowed amount, 90-day PDP	5,673	5,694	$1,001	$1,082	$966	$1,044	$3	-$79	$84	-$66	$71
Other institutional services standardized allowed amount, 90-day PDP	5,673	5,694	$309	$387	$304	$368	$15	-$47	$76	-$37	$66
Other non-institutional services standardized allowed amount, 90-day PDP	5,673	5,694	$367	$374	$352	$333	$26	-$18	$70	-$11	$63
Qualifying inpatient length of stay	5,711	5,711	4.7	4.6	4.8	4.6	0.0	0.0	0.1	0.0	0.1
Number of institutional PAC days, 90-day PDP	5,699	5,705	25.2	21.2	24.3	24.0	-3.7	-5.0	-2.5	-4.8	-2.7
Number of SNF days, 90-day PDP	5,699	5,705	24.7	20.8	23.8	23.6	-3.6	-4.9	-2.4	-4.7	-2.6
Number of HHA visits, 90-day PDP[1]	3,784	3,192	12.5	13.6	12.5	12.6	1.0	0.4	1.6	0.5	1.5
Emergency department use, first 30 days of episode	5,685	5,673	7.4%	7.7%	8.6%	7.9%	1.0	-0.4	2.5	-0.2	2.3
Emergency department use, first 90 days of episode	5,680	5,673	15.1%	16.0%	16.7%	15.6%	2.0	-0.1	4.2	0.3	3.8
Unplanned readmission rate, first 30 days of episode	5,685	5,673	8.4%	6.7%	8.4%	7.0%	-0.3	-1.9	1.3	-1.7	1.1
Unplanned readmission rate, first 90 days of episode	5,680	5,673	13.8%	12.1%	13.5%	12.4%	-0.6	-2.6	1.4	-2.3	1.1
All-cause mortality rate, first 30 days of episode	5,687	5,691	1.3%	1.0%	1.6%	1.4%	-0.1	-0.8	0.5	-0.6	0.4
All-cause mortality rate, first 90 days of episode	5,682	5,691	3.0%	2.9%	3.3%	3.6%	-0.4	-1.4	0.7	-1.2	0.5
All-cause mortality rate, first 120 days of episode	5,361	5,378	3.5%	3.3%	3.9%	4.6%	-1.0	-2.1	0.2	-1.9	0.0

[1] Dependent on having at least one day or visit in the given setting.

Exhibit K.5: Major Joint Replacement of the Lower Extremity, Fracture Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,481	1,492	$46,329	$44,056	$44,743	$46,098	-$3,628	-$5,790	-$1,466	-$5,442	-$1,814
Total allowed payment amount, IP through 120-day PDP	1,408	1,410	$49,277	$46,757	$47,505	$48,772	-$3,788	-$6,303	-$1,272	-$5,899	-$1,677
Total amount included in the bundle definition, 30-day episodes	121	121	$14,250	$16,209	$14,706	$15,904	$761	-$1,206	$2,728	-$890	$2,412
Total amount included in the bundle definition, 60-day episodes	396	395	$24,584	$21,527	$22,963	$23,823	-$3,918	-$7,082	-$754	-$6,573	-$1,262
Total amount not included the bundle, 60-day episodes	396	395	$178	$365	$162	$211	$137	-$149	$423	-$103	$377
Total amount included in the bundle definition, 90-day episodes	966	975	$28,925	$26,793	$28,019	$27,805	-$1,918	-$4,390	$553	-$3,993	$156
Total amount not included the bundle, 90 day episodes	966	975	$475	$556	$425	$451	$55	-$283	$392	-$229	$338
Total allowed payment amount, 30 days pre-bundle	1,483	1,491	$20,406	$20,149	$19,648	$20,586	-$1,196	-$2,086	-$307	-$1,943	-$450
Total allowed payment amount, 30 days post-bundle	1,362	1,341	$4,122	$3,631	$3,892	$3,921	-$519	-$1,246	$207	-$1,129	$90
Total allowed payment amount, 90 days post-bundle	1,354	1,333	$10,523	$8,771	$10,171	$9,636	-$1,218	-$2,838	$403	-$2,578	$142
Readmissions standardized allowed amount, 90-day PDP	1,498	1,500	$3,206	$2,904	$3,042	$3,354	-$614	-$1,425	$198	-$1,295	$67
SNF standardized allowed amount, 90-day PDP	1,498	1,500	$20,574	$18,273	$19,218	$19,848	-$2,931	-$4,502	-$1,359	-$4,249	-$1,612
HHA standardized allowed amount, 90-day PDP	1,498	1,500	$2,052	$2,279	$1,987	$1,982	$231	-$5	$468	$33	$430
Therapy standardized allowed amount, 90-day PDP	1,481	1,492	$205	$260	$209	$200	$64	-$15	$143	-$3	$130
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,481	1,492	$293	$266	$277	$251	-$1	-$39	$37	-$33	$31

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	1,481	1,492	$241	$256	$249	$281	-$16	-$87	$55	-$76	$43
Evaluation and management standardized allowed amount, 90-day PDP	1,481	1,492	$1,426	$1,507	$1,342	$1,479	-$57	-$240	$127	-$210	$97
Other institutional services standardized allowed amount, 90-day PDP	1,481	1,492	$296	$442	$373	$430	$89	-$29	$206	-$10	$187
Other non-institutional services standardized allowed amount, 90-day PDP	1,481	1,492	$562	$561	$548	$502	$44	-$34	$123	-$22	$110
Qualifying inpatient length of stay	1,500	1,500	6.2	5.8	6.3	5.8	0.1	-0.1	0.3	-0.1	0.2
Number of institutional PAC days, 90-day PDP	1,495	1,500	41.0	33.6	38.7	37.5	-6.2	-9.2	-3.3	-8.7	-3.7
Number of SNF days, 90-day PDP	1,495	1,500	39.8	32.8	37.6	36.4	-5.8	-8.7	-2.9	-8.2	-3.4
Number of HHA visits, 90-day PDP[1]	950	850	14.7	15.8	14.8	14.7	1.2	-0.1	2.5	0.1	2.3
Emergency department use, first 30 days of episode	1,495	1,495	9.0%	10.4%	10.1%	9.5%	2.0	-1.2	5.3	-0.7	4.7
Emergency department use, first 90 days of episode	1,493	1,495	19.2%	21.1%	20.6%	20.5%	2.0	-2.5	6.5	-1.8	5.8
Unplanned readmission rate, first 30 days of episode	1,495	1,495	15.0%	10.2%	15.0%	12.8%	-2.5	-6.3	1.3	-5.7	0.7
Unplanned readmission rate, first 90 days of episode	1,493	1,495	23.6%	19.8%	23.7%	22.2%	-2.4	-7.1	2.3	-6.4	1.6
All-cause mortality rate, first 30 days of episode	1,478	1,481	4.6%	3.3%	5.8%	5.1%	-0.5	-2.9	1.8	-2.5	1.5
All-cause mortality rate, first 90 days of episode	1,476	1,481	10.1%	9.6%	10.7%	12.0%	-1.7	-5.4	2.0	-4.8	1.4
All-cause mortality rate, first 120 days of episode	1,405	1,396	11.5%	10.9%	12.6%	14.8%	-2.7	-6.7	1.2	-6.0	0.6

[1] Dependent on having at least one day or visit in the given setting

Exhibit K.6: Major Joint Replacement of the Lower Extremity, Non-fracture Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	4,192	4,202	$30,720	$30,495	$30,149	$30,981	-$1,056	-$1,984	-$129	-$1,835	-$278
Total allowed payment amount, IP through 120-day PDP	3,946	3,978	$32,363	$32,199	$31,513	$32,496	-$1,147	-$2,231	-$63	-$2,057	-$237
Total amount included in the bundle definition, 30-day episodes	439	439	$9,742	$9,927	$10,832	$11,101	-$85	-$1,266	$1,097	-$1,076	$907
Total amount included in the bundle definition, 60-day episodes	1,171	1,175	$13,010	$13,017	$13,536	$14,178	-$636	-$1,899	$627	-$1,696	$424
Total amount not included the bundle, 60-day episodes	1,171	1,175	$217	$188	$146	$140	-$23	-$200	$155	-$172	$126
Total amount included in the bundle definition, 90-day episodes	2,584	2,584	$16,348	$15,583	$15,204	$15,631	-$1,192	-$2,308	-$76	-$2,129	-$256
Total amount not included the bundle, 90 day episodes	2,584	2,584	$376	$365	$341	$381	-$51	-$223	$120	-$195	$93
Total allowed payment amount, 30 days pre-bundle	4,194	4,198	$16,033	$16,229	$15,871	$16,171	-$104	-$398	$190	-$351	$143
Total allowed payment amount, 30 days post-bundle	4,163	4,165	$1,819	$1,795	$1,607	$1,750	-$167	-$466	$132	-$418	$84
Total allowed payment amount, 90 days post-bundle	4,138	4,126	$5,047	$4,745	$4,519	$4,676	-$460	-$1,135	$215	-$1,026	$107
Readmissions standardized allowed amount, 90-day PDP	4,208	4,211	$1,486	$1,511	$1,297	$1,461	-$139	-$495	$217	-$438	$160
SNF standardized allowed amount, 90-day PDP	4,208	4,211	$10,040	$9,117	$9,771	$10,297	-$1,450	-$2,129	-$771	-$2,020	-$880
HHA standardized allowed amount, 90-day PDP	4,208	4,211	$1,920	$2,281	$1,834	$1,790	$404	$233	$574	$260	$547
Therapy standardized allowed amount, 90-day PDP	4,192	4,202	$665	$649	$699	$677	$5	-$57	$67	-$47	$57
Imaging and laboratory services standardized allowed amount, 90-day PDP	4,192	4,202	$291	$271	$292	$267	$4	-$20	$29	-$16	$25

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	4,192	4,202	$289	$290	$270	$285	-$13	-$53	$26	-$47	$20
Evaluation and management standardized allowed amount, 90-day PDP	4,192	4,202	$854	$932	$837	$901	$14	-$57	$85	-$46	$74
Other institutional services standardized allowed amount, 90-day PDP	4,192	4,202	$311	$370	$280	$348	-$10	-$78	$58	-$67	$47
Other non-institutional services standardized allowed amount, 90-day PDP	4,192	4,202	$300	$300	$288	$282	$6	-$40	$53	-$33	$45
Qualifying inpatient length of stay	4,211	4,211	4.3	4.2	4.3	4.2	0.0	0.0	0.1	0.0	0.1
Number of institutional PAC days, 90-day PDP	4,204	4,205	19.8	16.9	19.4	19.3	-2.8	-4.0	-1.6	-3.8	-1.8
Number of SNF days, 90-day PDP	4,204	4,205	19.6	16.7	19.2	19.1	-2.8	-4.0	-1.6	-3.8	-1.8
Number of HHA visits, 90-day PDP[1]	2,834	2,342	11.8	12.8	11.7	11.9	0.8	0.1	1.5	0.3	1.4
Emergency department use, first 30 days of episode	4,190	4,178	6.9%	6.7%	8.1%	7.4%	0.5	-1.0	2.1	-0.8	1.8
Emergency department use, first 90 days of episode	4,187	4,178	13.7%	14.2%	15.4%	13.9%	1.9	-0.3	4.2	0.0	3.8
Unplanned readmission rate, first 30 days of episode	4,190	4,178	6.2%	5.4%	6.2%	4.9%	0.4	-1.2	2.0	-0.9	1.7
Unplanned readmission rate, first 90 days of episode	4,187	4,178	10.5%	9.4%	10.1%	9.0%	-0.1	-2.0	1.9	-1.7	1.6
All-cause mortality rate, first 30 days of episode	4,209	4,210	0.2%	0.2%	0.3%	0.2%	0.1	-0.3	0.4	-0.2	0.3
All-cause mortality rate, first 90 days of episode	4,206	4,210	0.7%	0.6%	0.8%	0.7%	0.1*	-0.5	0.6	-0.4	0.5
All-cause mortality rate, first 120 days of episode	3,956	3,982	0.9%	0.7%	1.0%	1.0%	-0.3	-1.0	0.3	-0.8	0.2

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit K.7: Congestive Heart Failure Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	2,632	2,631	$39,017	$39,346	$38,625	$39,931	-$978	-$2,668	$711	-$2,396	$440
Total allowed payment amount, IP through 120-day PDP	2,542	2,544	$42,810	$43,622	$42,451	$44,067	-$804	-$2,756	$1,148	-$2,442	$835
Total amount included in the bundle definition, 30-day episodes	144	142	$14,604	$13,745	$13,858	$14,148	-$1,149	-$3,384	$1,086	-$3,025	$727
Total amount included in the bundle definition, 60-day episodes	329	332	$21,495	$21,400	$22,951	$22,096	$761	-$1,849	$3,370	-$1,430	$2,951
Total amount not included the bundle, 60-day episodes	329	332	$321	$554	$336	$523	$46	-$479	$572	-$394	$487
Total amount included in the bundle definition, 90-day episodes	2,162	2,156	$28,911	$28,923	$27,862	$29,160	-$1,285	-$2,950	$379	-$2,683	$112
Total amount not included the bundle, 90 day episodes	2,162	2,156	$640	$876	$802	$833	$205	-$96	$506	-$48	$458
Total allowed payment amount, 30 days pre-bundle	2,635	2,630	$18,466	$17,825	$17,742	$17,881	-$779	-$1,789	$230	-$1,627	$68
Total allowed payment amount, 30 days post-bundle	1,993	2,013	$5,548	$5,571	$5,820	$5,893	-$50	-$835	$734	-$709	$608
Total allowed payment amount, 90 days post-bundle	1,982	1,992	$15,504	$15,226	$15,771	$15,487	$5	-$1,753	$1,764	-$1,471	$1,481
Readmissions standardized allowed amount, 90-day PDP	2,646	2,649	$6,506	$6,735	$6,702	$6,694	$236	-$631	$1,103	-$492	$964
SNF standardized allowed amount, 90-day PDP	2,646	2,649	$16,169	$15,874	$15,671	$16,903	-$1,526	-$2,576	-$476	-$2,408	-$645
HHA standardized allowed amount, 90-day PDP	2,646	2,649	$1,452	$1,762	$1,440	$1,519	$230	$60	$401	$88	$373
Therapy standardized allowed amount, 90-day PDP	2,632	2,631	$123	$108	$135	$123	-$4	-$54	$46	-$46	$38
Imaging and laboratory services standardized allowed amount, 90-day PDP	2,632	2,631	$334	$353	$321	$337	$2	-$29	$33	-$24	$28

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	2,632	2,631	$251	$258	$251	$272	-$15	-$67	$38	-$59	$29
Evaluation and management standardized allowed amount, 90-day PDP	2,632	2,631	$2,439	$2,622	$2,307	$2,444	$46	-$131	$223	-$102	$195
Other institutional services standardized allowed amount, 90-day PDP	2,632	2,631	$417	$547	$495	$571	$55	-$54	$163	-$37	$146
Other non-institutional services standardized allowed amount, 90-day PDP	2,632	2,631	$758	$745	$743	$720	$9	-$62	$81	-$51	$70
Qualifying inpatient length of stay	2,649	2,649	7.0	6.8	6.9	6.7	0.1	-0.2	0.4	-0.1	0.4
Number of institutional PAC days, 90-day PDP	2,637	2,643	33.6	30.7	33.8	33.2	-2.2	-4.3	-0.2	-3.9	-0.5
Number of SNF days, 90-day PDP	2,637	2,642	32.8	30.0	33.1	32.4	-2.2	-4.2	-0.2	-3.9	-0.5
Number of HHA visits, 90-day PDP1	1,469	1,291	14.5	15.1	14.5	14.8	0.3	-0.9	1.5	-0.7	1.3
Emergency department use, first 30 days of episode	2,633	2,635	11.1%	9.8%	11.4%	11.2%	-1.2	-3.7	1.4	-3.3	1.0
Emergency department use, first 90 days of episode	2,630	2,635	21.7%	22.4%	23.0%	23.0%	0.8	-2.7	4.3	-2.2	3.7
Unplanned readmission rate, first 30 days of episode	2,633	2,635	25.3%	23.6%	26.1%	23.9%	0.5	-3.1	4.1	-2.6	3.5
Unplanned readmission rate, first 90 days of episode	2,630	2,635	45.9%	44.6%	45.5%	43.3%	0.8	-3.5	5.2	-2.8	4.5
All-cause mortality rate, first 30 days of episode	2,618	2,620	12.4%	10.7%	12.2%	11.4%	-0.9	-3.5	1.8	-3.1	1.4
All-cause mortality rate, first 90 days of episode	2,615	2,620	28.7%	25.8%	28.0%	25.4%	-0.2	-3.9	3.5	-3.3	2.9
All-cause mortality rate, first 120 days of episode	2,522	2,527	33.1%	30.9%	33.0%	30.0%	0.7*	-3.1	4.6	-2.5	4.0

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit K.8: Medical Non-infectious Orthopedic Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,991	1,987	$38,198	$38,228	$37,178	$38,805	-$1,596*	-$3,377	$184	-$3,091	-$102
Total allowed payment amount, IP through 120-day PDP	1,929	1,926	$42,249	$42,429	$40,926	$42,667	-$1,561*	-$3,739	$618	-$3,389	$268
Total amount included in the bundle definition, 30-day episodes	62	62	$14,127	$13,978	$14,875	$15,256	-$530	-$3,977	$2,918	-$3,423	$2,364
Total amount included in the bundle definition, 60-day episodes	192	192	$23,362	$22,261	$23,025	$24,363	-$2,439	-$5,209	$332	-$4,764	-$113
Total amount not included the bundle, 60-day episodes	192	192	$447	$346	$496	$819	-$424	-$988	$140	-$897	$49
Total amount included in the bundle definition, 90-day episodes	1,739	1,734	$29,854	$30,150	$28,829	$30,296	-$1,171	-$2,861	$519	-$2,590	$247
Total amount not included the bundle, 90 day episodes	1,739	1,734	$957	$923	$987	$787	$166	-$228	$559	-$164	$496
Total allowed payment amount, 30 days pre-bundle	1,993	1,987	$11,180	$11,493	$11,190	$11,702	-$199	-$1,040	$642	-$905	$507
Total allowed payment amount, 30 days post-bundle	1,837	1,806	$4,619	$4,483	$4,358	$4,384	-$161	-$901	$578	-$782	$459
Total allowed payment amount, 90 days post-bundle	1,820	1,798	$12,248	$12,190	$11,177	$11,349	-$229	-$1,942	$1,484	-$1,667	$1,209
Readmissions standardized allowed amount, 90-day PDP	2,014	2,015	$3,923	$3,816	$4,133	$4,051	-$25	-$835	$784	-$705	$654
SNF standardized allowed amount, 90-day PDP	2,014	2,015	$21,056	$20,539	$20,220	$21,353	-$1,650	-$2,979	-$320	-$2,765	-$534
HHA standardized allowed amount, 90-day PDP	2,014	2,015	$1,810	$2,125	$1,709	$1,958	$65	-$142	$272	-$109	$239
Therapy standardized allowed amount, 90-day PDP	1,991	1,988	$210	$142	$165	$128	-$32	-$94	$30	-$84	$20
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,991	1,988	$351	$333	$347	$323	$6	-$32	$45	-$26	$39

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	1,991	1,988	$372	$361	$370	$325	$35	-$34	$104	-$23	$93
Evaluation and management standardized allowed amount, 90-day PDP	1,991	1,988	$1,892	$2,059	$1,849	$2,067	-$51	-$220	$118	-$193	$91
Other institutional services standardized allowed amount, 90-day PDP	1,991	1,988	$426	$544	$402	$495	$26	-$91	$142	-$72	$124
Other non-institutional services standardized allowed amount, 90-day PDP	1,991	1,988	$634	$592	$572	$565	-$35	-$105	$36	-$94	$24
Qualifying inpatient length of stay	2,016	2,016	5.2	5.0	5.2	5.0	-0.1	-0.3	0.1	-0.2	0.0
Number of institutional PAC days, 90-day PDP	2,013	2,014	41.4	38.1	40.8	40.0	-2.5	-4.9	-0.1	-4.5	-0.5
Number of SNF days, 90-day PDP	2,013	2,014	40.7	37.4	40.0	39.3	-2.5	-4.9	-0.1	-4.5	-0.5
Number of HHA visits, 90-day PDP1	1,286	1,200	13.9	14.4	13.7	14.1	0.1	-1.0	1.3	-0.8	1.1
Emergency department use, first 30 days of episode	1,996	2,007	8.1%	7.8%	8.9%	8.5%	0.1	-2.6	2.8	-2.1	2.4
Emergency department use, first 90 days of episode	1,994	2,007	19.7%	19.7%	19.9%	21.1%	-1.3*	-5.2	2.6	-4.6	2.0
Unplanned readmission rate, first 30 days of episode	1,996	2,007	13.9%	12.2%	13.5%	11.9%	-0.1	-3.1	2.9	-2.6	2.4
Unplanned readmission rate, first 90 days of episode	1,994	2,007	27.0%	25.0%	26.5%	26.6%	-2.0	-6.2	2.2	-5.5	1.5
All-cause mortality rate, first 30 days of episode	2,002	2,006	3.7%	2.9%	3.4%	3.6%	-1.0*	-2.7	0.8	-2.5	0.6
All-cause mortality rate, first 90 days of episode	2,000	2,006	9.8%	7.9%	9.1%	9.2%	-2.1*	-5.0	0.9	-4.5	0.4
All-cause mortality rate, first 120 days of episode	1,934	1,938	11.5%	9.9%	10.9%	11.0%	-1.7	-4.9	1.5	-4.4	1.0

[1] Dependent on having at least one day or visit in the given setting

Exhibit K.9: Hip & Femur Procedures except Major Joint Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	2,001	2,010	$47,422	$46,325	$46,334	$47,279	-$2,042	-$3,668	-$415	-$3,407	-$677
Total allowed payment amount, IP through 120-day PDP	1,900	1,895	$50,482	$49,463	$49,533	$50,408	-$1,894	-$3,775	-$14	-$3,473	-$316
Total amount included in the bundle definition, 30-day episodes	139	136	$14,555	$15,147	$15,601	$16,275	-$82	-$2,433	$2,268	-$2,055	$1,890
Total amount included in the bundle definition, 60-day episodes	359	365	$27,128	$25,826	$25,196	$26,197	-$2,303	-$4,553	-$53	-$4,192	-$414
Total amount not included the bundle, 60-day episodes	359	365	$173	$344	$395	$237	$328	-$37	$693	$22	$634
Total amount included in the bundle definition, 90-day episodes	1,503	1,504	$31,115	$29,008	$30,152	$30,844	-$2,799	-$4,523	-$1,075	-$4,246	-$1,352
Total amount not included the bundle, 90 day episodes	1,503	1,504	$376	$537	$498	$487	$173	-$66	$413	-$28	$374
Total allowed payment amount, 30 days pre-bundle	2,001	2,005	$18,485	$19,260	$18,549	$18,787	$537	-$206	$1,280	-$87	$1,161
Total allowed payment amount, 30 days post-bundle	1,825	1,826	$4,159	$3,852	$4,698	$4,211	$181	-$402	$763	-$309	$670
Total allowed payment amount, 90 days post-bundle	1,820	1,810	$10,457	$10,104	$11,480	$10,445	$682	-$632	$1,996	-$421	$1,785
Readmissions standardized allowed amount, 90-day PDP	2,019	2,019	$2,724	$2,899	$3,078	$2,595	$658	$50	$1,265	$148	$1,167
SNF standardized allowed amount, 90-day PDP	2,019	2,019	$24,074	$21,284	$22,423	$23,387	-$3,753	-$5,124	-$2,383	-$4,904	-$2,603
HHA standardized allowed amount, 90-day PDP	2,019	2,019	$1,779	$2,201	$1,765	$1,928	$259	$56	$463	$89	$430
IRF standardized allowed amount, 90-day PDP	2,019	2,019	$1,365	$1,241	$1,568	$1,166	$279	-$205	$763	-$127	$685
Therapy standardized allowed amount, 90-day PDP	2,001	2,010	$189	$240	$190	$200	$41	-$24	$106	-$13	$96

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Imaging and laboratory services standardized allowed amount, 90-day PDP	2,001	2,010	$270	$246	$276	$245	$8	-$23	$39	-$18	$34
Procedures standardized allowed amount, 90-day PDP	2,001	2,010	$217	$245	$254	$208	$75	$21	$129	$29	$120
Evaluation and management standardized allowed amount, 90-day PDP	2,001	2,010	$1,501	$1,605	$1,506	$1,563	$48	-$109	$205	-$84	$180
Other institutional services standardized allowed amount, 90-day PDP	2,001	2,010	$298	$419	$277	$381	$17	-$75	$108	-$60	$94
Other non-institutional services standardized allowed amount, 90-day PDP	2,001	2,010	$552	$531	$513	$496	-$5	-$67	$57	-$57	$47
Qualifying inpatient length of stay	2,019	2,019	6.0	5.7	6.0	5.8	0.0	-0.2	0.1	-0.2	0.1
Number of institutional PAC days, 90-day PDP	2,016	2,017	47.9	39.7	45.7	43.6	-6.2	-8.6	-3.7	-8.2	-4.1
Number of SNF days, 90-day PDP	2,015	2,017	46.6	38.5	44.2	42.6	-6.5	-8.9	-4.0	-8.5	-4.4
Number of HHA visits, 90-day PDP[1]	1,288	1,107	14.0	14.8	14.2	14.6	0.4	-0.6	1.5	-0.5	1.3
Emergency department use, first 30 days of episode	2,011	2,015	7.7%	7.8%	7.7%	7.4%	0.4*	-2.1	3.0	-1.7	2.6
Emergency department use, first 90 days of episode	2,011	2,015	19.0%	17.9%	18.3%	18.6%	-1.4*	-5.1	2.2	-4.5	1.7
Unplanned readmission rate, first 30 days of episode	2,011	2,015	12.3%	10.9%	12.9%	10.5%	1.1	-2.0	4.2	-1.5	3.7
Unplanned readmission rate, first 90 days of episode	2,011	2,015	22.1%	21.4%	24.0%	19.7%	3.6	-0.2	7.4	0.4	6.8
All-cause mortality rate, first 30 days of episode	1,987	1,994	3.9%	3.8%	5.2%	3.8%	1.3	-0.6	3.2	-0.3	2.9
All-cause mortality rate, first 90 days of episode	1,987	1,994	9.3%	9.4%	11.9%	10.1%	2.0	-1.0	5.0	-0.5	4.5
All-cause mortality rate, first 120 days of episode	1,880	1,876	11.8%	11.5%	14.1%	11.8%	2.0	-1.1	5.1	-0.6	4.6

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit K.10: Sepsis Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	3,834	3,818	$44,986	$43,872	$43,994	$44,594	-$1,715	-$3,251	-$179	-$3,004	-$426
Total allowed payment amount, IP through 120-day PDP	3,697	3,666	$49,085	$47,977	$47,687	$48,647	-$2,069	-$3,878	-$260	-$3,587	-$551
Total amount included in the bundle definition, 30-day episodes	226	223	$12,877	$14,609	$13,916	$14,292	$1,356	-$441	$3,152	-$152	$2,864
Total amount not included the bundle, 30-day episodes	226	223	$351	$562	$313	$384	$139	-$384	$663	-$300	$579
Total amount included in the bundle definition, 60-day episodes	492	492	$22,013	$22,340	$22,396	$23,159	-$436	-$3,037	$2,165	-$2,619	$1,747
Total amount not included the bundle, 60-day episodes	492	492	$745	$835	$565	$1,068	-$414	-$1,000	$173	-$906	$79
Total amount included in the bundle definition, 90-day episodes	3,117	3,102	$29,381	$28,326	$28,405	$29,651	-$2,301	-$3,775	-$827	-$3,538	-$1,064
Total amount not included the bundle, 90 day episodes	3,117	3,102	$1,262	$1,173	$1,068	$1,161	-$183	-$506	$140	-$454	$88
Total allowed payment amount, 30 days pre-bundle	3,835	3,817	$22,773	$22,003	$22,581	$21,395	$416	-$608	$1,439	-$443	$1,275
Total allowed payment amount, 30 days post-bundle	3,100	3,061	$5,619	$5,357	$5,225	$5,310	-$347	-$993	$299	-$889	$195
Total allowed payment amount, 90 days post-bundle	3,066	3,036	$15,067	$15,021	$14,387	$14,355	-$15	-$1,595	$1,565	-$1,341	$1,311
Readmissions standardized allowed amount, 90-day PDP	3,861	3,863	$6,390	$5,908	$6,253	$6,184	-$412	-$1,173	$348	-$1,050	$226
SNF standardized allowed amount, 90-day PDP	3,861	3,863	$17,541	$17,071	$16,957	$18,379	-$1,892	-$2,838	-$946	-$2,686	-$1,098
HHA standardized allowed amount, 90-day PDP	3,861	3,863	$1,258	$1,516	$1,109	$1,121	$246	$109	$383	$131	$361
LTCH standardized allowed amount, 90-day PDP	3,861	3,863	$1,315	$1,075	$1,367	$1,036	$91	-$449	$630	-$362	$543

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Therapy standardized allowed amount, 90-day PDP	3,834	3,818	$149	$134	$161	$152	-$6	-$58	$45	-$49	$37
Imaging and laboratory services standardized allowed amount, 90-day PDP	3,834	3,818	$340	$340	$330	$313	$17	-$13	$47	-$8	$42
Procedures standardized allowed amount, 90-day PDP	3,834	3,818	$321	$287	$293	$296	-$36	-$84	$12	-$76	$4
Evaluation and management standardized allowed amount, 90-day PDP	3,834	3,818	$2,239	$2,357	$2,136	$2,185	$69	-$82	$219	-$58	$195
Other institutional services standardized allowed amount, 90-day PDP	3,834	3,818	$483	$606	$497	$563	$57	-$45	$158	-$29	$142
Other non-institutional services standardized allowed amount, 90-day PDP	3,834	3,818	$813	$738	$779	$737	-$33	-$94	$28	-$85	$18
Qualifying inpatient length of stay	3,863	3,863	8.5	8.1	8.3	7.9	0.0	-0.3	0.3	-0.2	0.3
Number of institutional PAC days, 90-day PDP	3,850	3,845	36.9	33.4	37.0	36.7	-3.1	-5.0	-1.2	-4.7	-1.5
Number of SNF days, 90-day PDP	3,849	3,845	35.7	32.4	35.9	35.7	-3.1	-5.0	-1.3	-4.7	-1.6
Number of HHA visits, 90-day PDP[1]	1,826	1,441	14.1	15.2	14.1	14.0	1.2	0.1	2.3	0.3	2.1
Emergency department use, first 30 days of episode	3,833	3,841	9.7%	11.7%	10.3%	11.6%	0.7	-1.7	3.1	-1.4	2.7
Emergency department use, first 90 days of episode	3,831	3,841	21.1%	23.6%	21.5%	22.3%	1.8	-1.4	4.9	-0.9	4.4
Unplanned readmission rate, first 30 days of episode	3,833	3,841	22.2%	20.1%	23.3%	21.2%	0.1	-3.1	3.2	-2.6	2.7
Unplanned readmission rate, first 90 days of episode	3,831	3,841	38.8%	36.0%	39.5%	37.2%	-0.5	-4.1	3.1	-3.5	2.5
All-cause mortality rate, first 30 days of episode	3,803	3,810	11.4%	10.4%	12.2%	10.7%	0.6	-1.7	2.8	-1.3	2.5
All-cause mortality rate, first 90 days of episode	3,801	3,810	22.7%	21.0%	24.2%	22.1%	0.5*	-2.4	3.4	-2.0	2.9
All-cause mortality rate, first 120 days of episode	3,662	3,649	26.8%	24.4%	28.0%	25.7%	-0.2*	-3.3	2.9	-2.8	2.4

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit K.11: Simple Pneumonia and Respiratory Infections Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	2,545	2,532	$37,546	$37,179	$37,342	$38,692	-$1,717*	-$3,302	-$132	-$3,047	-$387
Total allowed payment amount, IP through 120-day PDP	2,466	2,464	$40,896	$40,391	$40,995	$42,442	-$1,952	-$3,816	-$89	-$3,516	-$389
Total amount included in the bundle definition, 30-day episodes	278	272	$13,902	$13,582	$14,006	$14,319	-$633	-$2,394	$1,128	-$2,111	$845
Total amount included in the bundle definition, 60-day episodes	547	543	$20,935	$21,205	$19,608	$21,194	-$1,315	-$3,497	$866	-$3,146	$515
Total amount not included the bundle, 60-day episodes	547	543	$358	$648	$474	$618	$145	-$264	$555	-$198	$489
Total amount included in the bundle definition, 90-day episodes	1,722	1,708	$27,045	$26,176	$26,659	$28,125	-$2,334	-$4,035	-$634	-$3,762	-$907
Total amount not included the bundle, 90 day episodes	1,722	1,708	$695	$902	$903	$930	$179	-$148	$505	-$95	$453
Total allowed payment amount, 30 days pre-bundle	2,547	2,523	$17,463	$16,809	$17,230	$17,135	-$558	-$1,499	$383	-$1,348	$232
Total allowed payment amount, 30 days post-bundle	1,994	2,004	$5,222	$4,732	$5,596	$5,586	-$479	-$1,182	$224	-$1,069	$111
Total allowed payment amount, 90 days post-bundle	1,972	1,984	$13,512	$13,343	$14,853	$14,528	$157	-$1,398	$1,712	-$1,148	$1,462
Readmissions standardized allowed amount, 90-day PDP	2,567	2,569	$5,117	$5,153	$5,338	$5,161	$213	-$489	$915	-$376	$802
SNF standardized allowed amount, 90-day PDP	2,567	2,569	$16,621	$16,044	$16,057	$17,375	-$1,895	-$2,924	-$866	-$2,758	-$1,031
HHA standardized allowed amount, 90-day PDP	2,567	2,569	$1,286	$1,479	$1,189	$1,299	$83	-$61	$227	-$37	$204
Therapy standardized allowed amount, 90-day PDP	2,545	2,532	$173	$147	$170	$144	$0	-$54	$54	-$46	$46
Imaging and laboratory services standardized allowed amount, 90-day PDP	2,545	2,532	$311	$301	$295	$306	-$20	-$50	$9	-$45	$5

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Procedures standardized allowed amount, 90-day PDP	2,545	2,532	$192	$192	$221	$192	$29	-$12	$70	-$5	$64
Evaluation and management standardized allowed amount, 90-day PDP	2,545	2,532	$1,810	$1,982	$1,886	$2,006	$52	-$96	$199	-$73	$176
Other institutional services standardized allowed amount, 90-day PDP	2,545	2,532	$391	$457	$372	$480	-$43	-$134	$49	-$120	$34
Other non-institutional services standardized allowed amount, 90-day PDP	2,545	2,532	$685	$654	$714	$657	$26	-$36	$88	-$26	$78
Qualifying inpatient length of stay	2,569	2,569	7.2	6.8	7.1	6.7	-0.1	-0.3	0.2	-0.3	0.1
Number of institutional PAC days, 90-day PDP	2,560	2,557	34.7	31.0	34.6	34.4	-3.5	-5.5	-1.5	-5.2	-1.9
Number of SNF days, 90-day PDP	2,559	2,557	34.1	30.4	34.0	33.6	-3.4	-5.4	-1.4	-5.1	-1.7
Number of HHA visits, 90-day PDP[1]	1,225	1,049	14.6	14.9	14.4	14.5	0.2	-0.9	1.3	-0.7	1.2
Emergency department use, first 30 days of episode	2,552	2,561	9.5%	10.8%	8.7%	11.0%	-1.0	-3.5	1.4	-3.1	1.0
Emergency department use, first 90 days of episode	2,550	2,561	20.3%	21.9%	19.9%	21.8%	-0.4	-3.7	3.0	-3.1	2.4
Unplanned readmission rate, first 30 days of episode	2,552	2,561	20.3%	20.2%	21.0%	19.1%	1.8	-1.3	4.9	-0.8	4.4
Unplanned readmission rate, first 90 days of episode	2,550	2,561	36.3%	34.1%	35.7%	33.4%	0.1	-3.6	3.7	-3.0	3.1
All-cause mortality rate, first 30 days of episode	2,535	2,535	11.6%	12.4%	12.9%	11.3%	2.4	-0.2	4.9	0.2	4.5
All-cause mortality rate, first 90 days of episode	2,533	2,535	24.6%	24.0%	24.3%	23.4%	0.3	-2.8	3.4	-2.3	2.9
All-cause mortality rate, first 120 days of episode	2,449	2,459	28.5%	27.7%	28.5%	27.1%	0.7	-2.7	4.0	-2.1	3.5

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit K.12: Other Respiratory Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	670	672	$47,331	$48,693	$48,200	$47,910	$1,652	-$2,603	$5,907	-$1,919	$5,223
Total allowed payment amount, IP through 120-day PDP	656	658	$51,690	$53,150	$52,543	$51,974	$2,029	-$3,063	$7,121	-$2,244	$6,303
Total amount included in the bundle definition, 60-day episodes	57	58	$24,956	$25,870	$23,232	$27,384	-$3,238	-$9,913	$3,438	-$8,841	$2,365
Total amount included in the bundle definition, 90-day episodes	591	593	$28,860	$29,945	$30,247	$30,027	$1,304	-$1,810	$4,419	-$1,310	$3,918
Total amount not included the bundle, 90 day episodes	591	593	$809	$853	$971	$1,164	-$149	-$755	$457	-$657	$360
Total allowed payment amount, 30 days pre-bundle	670	672	$25,395	$24,777	$26,487	$24,968	$901	-$1,960	$3,763	-$1,500	$3,303
Total allowed payment amount, 30 days post-bundle	514	500	$6,140	$5,719	$5,908	$6,274	-$786	-$2,787	$1,215	-$2,465	$893
Total allowed payment amount, 90 days post-bundle	506	495	$17,402	$16,209	$15,952	$16,255	-$1,496	-$6,409	$3,417	-$5,619	$2,628
Readmissions standardized allowed amount, 90-day PDP	676	676	$6,955	$7,850	$8,448	$7,598	$1,745	-$181	$3,671	$129	$3,362
SNF standardized allowed amount, 90-day PDP	676	676	$16,472	$15,770	$15,494	$17,113	-$2,322	-$4,264	-$379	-$3,952	-$691
HHA standardized allowed amount, 90-day PDP	676	676	$1,437	$1,709	$1,345	$1,590	$27	-$273	$327	-$225	$279
Imaging and laboratory services standardized allowed amount, 90-day PDP	670	672	$376	$359	$376	$366	-$7	-$81	$67	-$69	$56
Procedures standardized allowed amount, 90-day PDP	670	672	$234	$276	$316	$255	$103	$7	$200	$23	$184
Evaluation and management standardized allowed amount, 90-day PDP	670	672	$2,619	$2,967	$2,545	$2,622	$271	-$98	$641	-$39	$582
Other institutional services standardized allowed amount, 90-day PDP	670	672	$391	$507	$531	$549	$99	-$85	$283	-$55	$253

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	670	672	$839	$844	$911	$822	$94	-$46	$235	-$24	$212
Qualifying inpatient length of stay	676	676	9.5	9.0	9.0	8.6	-0.1	-0.9	0.7	-0.7	0.6
Number of institutional PAC days, 90-day PDP	674	674	34.5	31.6	33.2	34.1	-3.8	-7.5	-0.1	-6.9	-0.7
Number of SNF days, 90-day PDP	674	674	33.1	30.1	31.6	32.8	-4.2	-7.8	-0.6	-7.2	-1.2
Number of HHA visits, 90-day PDP[1]	360	343	14.5	14.5	13.8	14.4	-0.7	-2.8	1.4	-2.4	1.1
Emergency department use, first 30 days of episode	669	670	11.5%	11.9%	14.0%	11.9%	2.6	-2.4	7.5	-1.6	6.7
Emergency department use, first 90 days of episode	669	670	21.5%	23.3%	26.1%	23.8%	4.1	-2.6	10.9	-1.5	9.8
Unplanned readmission rate, first 30 days of episode	669	670	28.0%	25.3%	34.1%	26.0%	5.4	-1.0	11.9	0.0	10.9
Unplanned readmission rate, first 90 days of episode	669	670	43.6%	43.6%	48.7%	45.3%	3.5	-4.3	11.2	-3.1	10.0
All-cause mortality rate, first 30 days of episode	669	668	12.7%	10.0%	13.4%	11.2%	-0.4	-5.6	4.7	-4.8	3.9
All-cause mortality rate, first 90 days of episode	669	668	24.8%	24.0%	26.3%	27.0%	-1.5*	-8.3	5.3	-7.3	4.2
All-cause mortality rate, first 120 days of episode	656	654	28.8%	28.8%	30.7%	31.3%	-0.6*	-7.8	6.7	-6.6	5.5

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit K.13: Renal Failure Episodes, Model 3 SNF, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,310	1,308	$39,719	$40,276	$39,671	$39,047	$1,181	-$1,183	$3,544	-$803	$3,165
Total allowed payment amount, IP through 120-day PDP	1,282	1,285	$43,683	$44,657	$43,684	$42,947	$1,712	-$1,154	$4,578	-$693	$4,118
Total amount included in the bundle definition, 30-day episodes	134	134	$12,793	$13,823	$14,562	$13,969	$1,622	-$672	$3,917	-$303	$3,548
Total amount included in the bundle definition, 60-day episodes	83	87	$20,708	$22,932	$23,724	$23,273	$2,675	-$1,527	$6,877	-$852	$6,201
Total amount included in the bundle definition, 90-day episodes	1,093	1,088	$30,188	$30,117	$28,440	$28,034	$335	-$1,937	$2,606	-$1,571	$2,241
Total amount not included the bundle, 90 day episodes	1,093	1,088	$1,411	$1,260	$943	$1,130	-$338	-$830	$154	-$751	$75
Total allowed payment amount, 30 days pre-bundle	1,310	1,308	$17,072	$16,179	$17,019	$16,668	-$542	-$1,870	$787	-$1,657	$573
Total allowed payment amount, 30 days post-bundle	1,025	1,043	$5,614	$5,849	$5,664	$5,495	$404	-$636	$1,444	-$469	$1,277
Total allowed payment amount, 90 days post-bundle	1,013	1,035	$15,651	$15,600	$15,442	$15,265	$126	-$2,546	$2,798	-$2,117	$2,369
Readmissions standardized allowed amount, 90-day PDP	1,323	1,321	$6,083	$6,099	$5,871	$5,443	$445	-$723	$1,612	-$536	$1,425
SNF standardized allowed amount, 90-day PDP	1,323	1,321	$17,078	$17,579	$17,743	$18,170	$73	-$1,462	$1,609	-$1,216	$1,362
HHA standardized allowed amount, 90-day PDP	1,323	1,321	$1,433	$1,694	$1,424	$1,511	$174	-$52	$399	-$15	$363
Therapy standardized allowed amount, 90-day PDP	1,310	1,309	$131	$106	$129	$108	-$4	-$76	$68	-$65	$56
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,310	1,309	$351	$349	$335	$326	$8	-$42	$57	-$34	$49
Procedures standardized allowed amount, 90-day PDP	1,310	1,309	$278	$302	$290	$264	$51	-$21	$122	-$9	$111

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Evaluation and management standardized allowed amount, 90-day PDP	1,310	1,309	$2,392	$2,666	$2,289	$2,274	$290	$5	$574	$51	$528
Other institutional services standardized allowed amount, 90-day PDP	1,310	1,309	$486	$543	$523	$578	$3	-$157	$162	-$131	$137
Other non-institutional services standardized allowed amount, 90-day PDP	1,310	1,309	$834	$744	$778	$704	-$16	-$123	$91	-$106	$74
Qualifying inpatient length of stay	1,323	1,323	6.8	6.2	6.4	6.2	-0.4	-0.7	-0.1	-0.7	-0.1
Number of institutional PAC days, 90-day PDP	1,320	1,318	35.4	34.3	38.0	34.9	2.0	-1.1	5.1	-0.6	4.6
Number of SNF days, 90-day PDP	1,319	1,317	34.6	33.4	37.2	34.4	1.5	-1.6	4.6	-1.1	4.1
Number of HHA visits, 90-day PDP[1]	700	632	13.4	14.3	14.5	15.0	0.4	-1.2	2.0	-0.9	1.7
Emergency department use, first 30 days of episode	1,312	1,313	11.1%	10.8%	10.4%	10.3%	-0.2	-4.4	4.0	-3.7	3.3
Emergency department use, first 90 days of episode	1,312	1,312	23.2%	23.4%	24.8%	23.5%	1.5	-3.9	6.9	-3.0	6.0
Unplanned readmission rate, first 30 days of episode	1,312	1,313	21.5%	21.4%	23.3%	20.6%	2.6	-2.1	7.2	-1.3	6.4
Unplanned readmission rate, first 90 days of episode	1,312	1,312	38.9%	39.2%	39.2%	36.6%	2.9	-3.0	8.8	-2.1	7.8
All-cause mortality rate, first 30 days of episode	1,304	1,313	9.7%	9.5%	8.4%	10.6%	-2.4	-5.8	1.0	-5.2	0.5
All-cause mortality rate, first 90 days of episode	1,304	1,312	23.1%	23.1%	20.1%	22.8%	-2.7	-7.2	1.8	-6.5	1.1
All-cause mortality rate, first 120 days of episode	1,276	1,287	26.9%	27.3%	23.2%	26.3%	-2.8	-7.7	2.0	-6.9	1.2

[1] Dependent on having at least one day or visit in the given setting.

Appendix L: Impact of BPCI on Allowed Payment, Quality, and Utilization Measures, by Clinical Episode, Baseline to Intervention, Model 3 HHA

The following tables display risk-adjusted difference-in-differences results for all payment, quality, and utilization measures assessed in the Year 4 annual report. Results are presented by EI type/clinical episode. Please observe the following abbreviations, which are used throughout the appendix:

- DiD = difference-in-differences
- LCI = lower confidence interval at the 5% and 10% level
- UCI = upper confidence interval at the 5% and 10% level
- PDP = post-qualifying hospitalization discharge period
- IP = inpatient hospitalizations
- PAC = post-acute care
- SNF = skilled nursing facility
- HHA = home health agency
- IRF = inpatient rehabilitation facility

Note that sample sizes reflect the number of episodes initiated during the intervention period that met inclusion criteria for the given outcome. Medicare payments are risk-adjusted and standardized to remove the effect of geographic differences in wages, extra amounts to account for teaching programs and other policy factors. Results reflect Lewin analysis of Medicare claims data for episodes that began Q4 2011 through Q3 2012 (baseline) and Q4 2013 through Q3 2016 (intervention period) for BPCI episode initiators and the matched comparison providers.

Exhibit L.1: Major Joint Replacement of the Lower Extremity Episodes, Model 3 HHA, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	2,897	2,901	$23,856	$23,921	$23,576	$23,510	$131*	-$633	$896	-$511	$773
Total allowed payment amount, IP through 120-day PDP	2,729	2,762	$24,980	$25,204	$24,688	$24,746	$165*	-$659	$989	-$526	$857
Total amount included in the bundle definition, 60-day episodes	424	432	$4,867	$5,897	$4,823	$5,570	$282	-$807	$1,372	-$632	$1,197
Total amount included in the bundle definition, 90-day episodes	2,473	2,468	$6,989	$6,525	$6,474	$6,406	-$396	-$1,166	$374	-$1,042	$251
Total amount not included the bundle, 90-day episodes	2,473	2,468	$362	$392	$378	$434	-$26	-$185	$132	-$159	$106
Total allowed payment amount, 30 days pre-bundle	2,897	2,899	$18,109	$18,152	$17,994	$17,552	$486	-$449	$1,420	-$299	$1,270
Total allowed payment amount, 30 days post-bundle	2,868	2,882	$1,155	$1,307	$1,038	$1,085	$105	-$153	$364	-$111	$322
Total allowed payment amount, 90 days post-bundle	2,845	2,856	$3,281	$3,391	$3,130	$3,078	$162	-$408	$733	-$317	$641
Readmissions standardized allowed amount, 90-day PDP	2,931	2,930	$942	$885	$905	$904	-$57	-$364	$250	-$314	$201
SNF standardized allowed amount, 90-day PDP	2,931	2,930	$1,580	$1,543	$1,422	$1,713	-$327	-$599	-$55	-$555	-$99
HHA standardized allowed amount, 90-day PDP	2,931	2,930	$3,547	$3,522	$3,412	$3,412	-$25	-$248	$197	-$212	$161
IRF standardized allowed amount, 90-day PDP	2,931	2,930	$1,456	$1,604	$1,612	$1,189	$570	$102	$1,038	$177	$963
Therapy standardized allowed amount, 90-day PDP	2,897	2,902	$677	$629	$689	$694	-$53	-$137	$30	-$123	$17
Imaging and laboratory services standardized allowed amount, 90-day PDP	2,897	2,902	$289	$248	$295	$258	-$4	-$38	$30	-$32	$24
Procedures standardized allowed amount, 90-day PDP	2,897	2,902	$258	$217	$281	$294	-$54	-$94	-$14	-$88	-$20

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Evaluation and management standardized allowed amount, 90-day PDP	2,897	2,902	$525	$573	$512	$496	$63	-$3	$130	$8	$119
Other institutional services standardized allowed amount, 90-day PDP	2,897	2,902	$317	$351	$287	$369	-$49	-$135	$38	-$121	$24
Other non-institutional services standardized allowed amount, 90-day PDP	2,897	2,902	$179	$212	$187	$192	$28	-$28	$84	-$19	$75
Qualifying inpatient length of stay	2,931	2,931	4.1	3.4	4.1	3.6	-0.1	-0.2	0.0	-0.2	0.0
Number of institutional PAC days, 90-day PDP[1]	741	705	14.4	14.7	13.6	13.9	0.1	-1.4	1.5	-1.1	1.3
Number of SNF days, 90-day PDP[1]	388	552	15.7	16.4	14.5	14.8	0.4	-1.5	2.3	-1.2	2.0
Number of HHA visits, 90-day PDP	2,927	2,929	12.0	11.9	12.1	11.6	0.4	-0.3	1.2	-0.2	1.1
Emergency department use, first 30 days of episode	2,889	2,928	8.1%	9.0%	7.3%	8.4%	-0.2*	-2.3	1.8	-1.9	1.5
Emergency department use, first 90 days of episode	2,887	2,928	13.5%	14.2%	12.7%	14.2%	-0.8	-3.4	1.8	-3.0	1.3
Unplanned readmission rate, first 30 days of episode	2,889	2,928	5.0%	3.8%	3.5%	3.5%	-1.1*	-2.6	0.4	-2.3	0.2
Unplanned readmission rate, first 90 days of episode	2,887	2,928	8.1%	6.4%	6.2%	6.0%	-1.5*	-3.7	0.8	-3.4	0.4
All-cause mortality rate, first 90 days of episode	2,926	2,930	0.5%	0.6%	0.4%	0.5%	0.1	-0.5	0.7	-0.4	0.6
All-cause mortality rate, first 120 days of episode	2,725	2,755	0.6%	1.0%	0.4%	0.6%	0.2	-0.5	1.0	-0.4	0.9

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day PDP, emergency department visits, and readmission outcomes.

Exhibit L.2: Congestive Heart Failure Episodes, Model 3 HHA, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	3,990	4,085	$25,219	$25,533	$24,466	$25,337	-$557	-$1,619	$505	-$1,448	$334
Total allowed payment amount, IP through 120-day PDP	3,890	3,988	$29,220	$29,574	$28,281	$29,267	-$632	-$1,894	$631	-$1,691	$428
Total amount included in the bundle definition, 60-day episodes	160	161	$12,615	$10,239	$10,355	$10,306	-$2,327	-$6,356	$1,702	-$5,708	$1,055
Total amount included in the bundle definition, 90-day episodes	3,692	3,782	$14,762	$14,715	$14,090	$14,699	-$656	-$1,486	$175	-$1,352	$41
Total amount not included the bundle, 90-day episodes	3,692	3,782	$861	$937	$885	$1,042	-$82	-$285	$120	-$252	$88
Total allowed payment amount, 30 days pre-bundle	3,991	4,084	$14,953	$15,323	$14,414	$14,478	$307	-$519	$1,133	-$386	$1,000
Total allowed payment amount, 30 days post-bundle	3,523	3,570	$4,722	$4,380	$4,452	$4,562	-$452	-$1,036	$131	-$942	$37
Total allowed payment amount, 90 days post-bundle	3,466	3,546	$13,397	$12,592	$12,630	$13,421	-$1,595	-$2,891	-$299	-$2,682	-$507
Readmissions standardized allowed amount, 90-day PDP	4,118	4,119	$6,566	$6,416	$6,417	$6,573	-$306	-$1,049	$437	-$930	$317
SNF standardized allowed amount, 90-day PDP	4,118	4,119	$2,051	$2,449	$1,931	$2,400	-$71	-$391	$248	-$340	$197
HHA standardized allowed amount, 90-day PDP	4,118	4,119	$3,441	$3,324	$3,085	$3,114	-$147	-$333	$39	-$303	$9
IRF standardized allowed amount, 90-day PDP	4,118	4,119	$825	$878	$631	$609	$76	-$215	$367	-$168	$320
Therapy standardized allowed amount, 90-day PDP	3,990	4,085	$38	$34	$39	$36	$0	-$15	$15	-$12	$12
Imaging and laboratory services standardized allowed amount, 90-day PDP	3,990	4,085	$493	$526	$498	$552	-$22	-$58	$14	-$52	$9
Procedures standardized allowed amount, 90-day PDP	3,990	4,085	$339	$309	$378	$370	-$21	-$70	$27	-$62	$20

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Evaluation and management standardized allowed amount, 90-day PDP	3,990	4,085	$1,786	$1,818	$1,826	$1,904	-$47	-$158	$64	-$140	$46
Other institutional services standardized allowed amount, 90-day PDP	3,990	4,085	$698	$846	$695	$879	-$37	-$185	$111	-$161	$88
Other non-institutional services standardized allowed amount, 90-day PDP	3,990	4,085	$513	$562	$500	$545	$5	-$61	$70	-$50	$59
Qualifying inpatient length of stay	4,119	4,119	6.0	5.8	6.0	5.7	0.1	-0.2	0.4	-0.2	0.3
Number of institutional PAC days, 90-day PDP[1]	966	991	20.8	20.7	20.3	21.0	-0.8	-2.7	1.1	-2.4	0.8
Number of SNF days, 90-day PDP[1]	801	854	21.8	21.1	20.6	21.3	-1.3	-3.5	0.9	-3.2	0.5
Number of HHA visits, 90-day PDP	4,115	4,114	20.7	17.0	17.0	15.9	-2.6	-5.9	0.6	-5.3	0.1
Emergency department use, first 30 days of episode	4,008	4,108	10.5%	11.8%	11.3%	12.1%	0.5	-1.6	2.6	-1.3	2.3
Emergency department use, first 90 days of episode	4,006	4,108	20.9%	23.3%	23.1%	23.3%	2.2	-0.3	4.6	0.1	4.2
Unplanned readmission rate, first 30 days of episode	4,008	4,108	24.7%	23.2%	23.3%	22.0%	-0.2*	-3.4	3.0	-2.9	2.5
Unplanned readmission rate, first 90 days of episode	4,006	4,108	44.3%	42.5%	40.5%	40.3%	-1.6	-4.8	1.7	-4.3	1.1
All-cause mortality rate, first 30 days of episode	4,074	4,100	4.5%	3.6%	4.7%	4.5%	-0.7	-1.9	0.6	-1.7	0.4
All-cause mortality rate, first 90 days of episode	4,073	4,100	13.2%	11.8%	12.4%	12.2%	-1.3*	-3.2	0.7	-2.9	0.4
All-cause mortality rate, first 120 days of episode	3,944	3,982	16.8%	14.9%	16.1%	15.6%	-1.4	-3.6	0.9	-3.3	0.6

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Exhibit L.3: Simple Pneumonia and Respiratory Infections Episodes, Model 3 HHA, Q4 2011 - Q3 2016

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Total allowed payment amount, IP through 90-day PDP	1,182	1,187	$22,685	$24,664	$23,635	$24,551	$1,063	-$990	$3,116	-$660	$2,786
Total allowed payment amount, IP through 120-day PDP	1,154	1,169	$25,663	$27,864	$26,689	$28,015	$875	-$1,540	$3,290	-$1,152	$2,902
Total amount included in the bundle definition, 90-day episodes	1,158	1,162	$11,970	$12,806	$12,251	$12,825	$262	-$1,270	$1,793	-$1,024	$1,547
Total amount not included the bundle, 90-day episodes	1,158	1,162	$1,146	$863	$1,032	$1,159	-$409	-$844	$26	-$774	-$44
Total allowed payment amount, 30 days pre-bundle	1,183	1,187	$14,693	$16,243	$14,468	$15,230	$788	-$555	$2,130	-$339	$1,914
Total allowed payment amount, 30 days post-bundle	1,048	1,038	$3,331	$3,496	$3,471	$3,749	-$113	-$935	$709	-$803	$577
Total allowed payment amount, 90 days post-bundle	1,040	1,028	$9,930	$10,073	$10,063	$10,530	-$324	-$2,344	$1,696	-$2,019	$1,371
Readmissions standardized allowed amount, 90-day PDP	1,207	1,208	$3,913	$4,255	$4,632	$4,854	$119	-$826	$1,065	-$674	$913
SNF standardized allowed amount, 90-day PDP	1,207	1,208	$2,267	$2,358	$1,920	$2,301	-$290	-$942	$362	-$837	$257
HHA standardized allowed amount, 90-day PDP	1,207	1,208	$3,672	$3,855	$3,566	$3,553	$196	-$81	$473	-$37	$429
IRF standardized allowed amount, 90-day PDP	1,207	1,208	$790	$1,441	$847	$948	$550	-$157	$1,257	-$43	$1,143
Imaging and laboratory services standardized allowed amount, 90-day PDP	1,182	1,187	$447	$472	$502	$499	$29	-$34	$91	-$24	$81
Procedures standardized allowed amount, 90-day PDP	1,182	1,187	$267	$242	$292	$277	-$11	-$79	$57	-$68	$46
Evaluation and management standardized allowed amount, 90-day PDP	1,182	1,187	$1,190	$1,408	$1,287	$1,320	$185	$1	$370	$31	$340
Other institutional services standardized allowed amount, 90-day PDP	1,182	1,187	$765	$834	$735	$1,027	-$223	-$462	$16	-$423	-$23

Outcome	Number of Intervention Episodes		BPCI		Comparison		DiD Estimate				
	BPCI	Comparison	Baseline	Intervention	Baseline	Intervention	DiD	95% LCI	95% UCI	90% LCI	90% UCI
Other non-institutional services standardized allowed amount, 90-day PDP	1,182	1,187	$539	$589	$506	$532	$24	-$101	$149	-$81	$129
Qualifying inpatient length of stay	1,208	1,208	6.0	5.5	6.2	5.8	0.0	-0.4	0.3	-0.3	0.3
Number of institutional PAC days, 90-day PDP[1]	368	315	19.2	18.2	20.1	17.9	1.1	-1.6	3.9	-1.2	3.5
Number of SNF days, 90-day PDP[1]	263	254	19.5	18.6	19.8	17.5	1.4	-1.8	4.7	-1.3	4.1
Number of HHA visits, 90-day PDP	1,206	1,208	17.1	18.1	16.2	16.2	0.9	-0.5	2.2	-0.3	2.0
Emergency department use, first 30 days of episode	1,187	1,201	14.4%	13.1%	13.1%	14.1%	-2.3*	-6.3	1.7	-5.7	1.1
Emergency department use, first 90 days of episode	1,186	1,201	28.5%	26.0%	26.5%	28.5%	-4.5	-9.8	0.8	-9.0	-0.1
Unplanned readmission rate, first 30 days of episode	1,187	1,201	16.7%	16.3%	18.0%	18.2%	-0.6	-5.1	3.9	-4.4	3.1
Unplanned readmission rate, first 90 days of episode	1,186	1,201	29.7%	31.9%	29.9%	31.1%	0.9*	-4.2	6.0	-3.4	5.2
All-cause mortality rate, first 30 days of episode	1,200	1,201	4.0%	4.3%	4.2%	4.6%	0.0	-2.4	2.4	-2.1	2.0
All-cause mortality rate, first 90 days of episode	1,199	1,201	11.6%	10.9%	11.6%	12.8%	-1.9	-5.6	1.7	-5.0	1.1
All-cause mortality rate, first 120 days of episode	1,154	1,177	13.9%	13.3%	14.0%	15.5%	-2.1	-6.0	1.7	-5.4	1.1

[1] Dependent on having at least one day or visit in the given setting

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for total allowed payment amount IP through 90-day and 120-day PDP, emergency department visits, readmission, and mortality outcomes.

Appendix M: Minimum Dataset (MDS) and Outcome and Assessment Information Set (OASIS) Outcome Definitions

To identify whether there were changes in patient mix across strata, we analyzed a number of patient characteristics associated with higher resource use. **Exhibits M.1 and M.2** present the complete list of outcomes from the MDS and OASIS initial patient assessments used in our analysis, including the outcome name, technical definition, and eligible sample. See **Appendix G** for definitions of the claim-based patient characteristics.

We categorized clinical episode strata into three broad groups: decline in patient resource intensity, increase in patient resource intensity, and no change. Our categorization was based on statistically significant changes in patient characteristics associated with higher resource use as well as the direction and average magnitude of the estimates. The claim- and assessment-based measures were considered separately. As described in **Appendix G**, a strata was considered to have had indications of a less resource intensive patient mix if three or more claim-based variables had DiD estimates indicating a decline in resource intensity that were statistically significant ($p<0.10$) or if the average magnitude of the claim-based DiD estimates was -2 or below. A Model 3 strata was considered to have had indications of a less resource intensive patient mix if they met the claim-based criteria or if five or more assessment-based variables had DiD estimates indicating a decline in resource intensity that were statistically significant ($p<0.10$)[1] or if the average magnitude of the assessment-based DiD estimates was -2 or below. We indicated that there was an increase in patient resource intensity using the same decision rules applied to DiD estimates that indicated an increase in resource intensity. If the claim- and assessment-based measures resulted in conflicting categorizations, we considered the strata to have no change in patient mix.

[1] We considered the "net" number of DiD estimates that were in the negative direction and statistically significant, meaning we subtracted the number of estimates that were in the positive direction and statistically significant. For example, a strata would be considered to have a less resource intensive patient mix if there were six DiD estimates that were negative and statistically significant and one estimate that was positive and statistically significant.

Exhibit M.1: Skilled Nursing Facility (SNF) Minimum Dataset (MDS) Assessment-based Outcome Definitions

Outcome Name	Measurement Period	Technical Definition	Eligible Sample	Average Percent Non-missing
Need extensive assistance or are totally dependent moving in bed	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the resident requires extensive assistance moving in bed, e.g. the resident required full staff performance at least three times; or if moving in bed occurred fewer than three times; 0= if the resident required non-weight-bearing assistance; a combination of full staff performance, weight-bearing assistance, and/or non-weight-bearing assistance; or oversight, encouragement, or cueing three or more times; or required less assistance)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%
Need extensive assistance or are totally dependent transferring, e.g., between bed and wheelchair	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the resident requires extensive assistance transferring, e.g., the resident required full staff performance at least three times; or if transferring occurred fewer than three times; 0= if the resident required non-weight-bearing assistance; required a combination of full staff performance, weight-bearing assistance, and/or non-weight-bearing assistance; or required oversight, encouragement, or cueing three or more times; or required less assistance)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%
Need extensive assistance or are totally dependent walking in room	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the resident requires extensive assistance walking in room, e.g., the resident required full staff performance at least three times; or if walking in room occurred fewer than three times; 0= if the resident required non-weight-bearing assistance; required a combination of full staff performance, weight-bearing assistance, and/or non-weight-bearing assistance; or required oversight, encouragement, or cueing three or more times; or required less assistance)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	98%

Outcome Name	Measurement Period	Technical Definition	Eligible Sample	Average Percent Non-missing
Need extensive assistance or are totally dependent using the toilet	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the resident requires extensive assistance using the toilet, e.g. the resident required full staff performance at least three times; or if using the toilet occurred fewer than three times; 0= if the resident required non-weight-bearing assistance; required a combination of full staff performance, weight-bearing assistance, and/or non-weight-bearing assistance; or required oversight, encouragement, or cueing three or more times; or required less assistance)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%
Not currently married	7-day lookback period (1st week of SNF stay)	Binary outcome (1= never married, widowed, separated, or divorced; 0= married).	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	94%
Moderate to severe cognitive impairment	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if resident scored from 0 to 12 on the Brief Interview for Mental Status (BIMS) cognitive test, e.g. moderately to severely impaired, or if resident scored 99 on the BIMS test, e.g. was unable to complete the interview; 0= if resident scored from 13 to 15 on the BIMS test, e.g. cognitively intact)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%
Moderate to severe depression	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the Total Severity Score based on the PHQ-9 or the PHQ-9-OV exceeds 10, e.g., moderate to severe depression; 0= if the Total Severity Score based on the PHQ-9 is less than or equal to 10 and the Total Severity Score based on the PHQ-9-OV is less than or equal to 10, e.g., minimal to mild depression.)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	93%
Rejected necessary evaluation or care at least once	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if resident rejected care consistent with goals 1-7 days; 0= if rejection of care consistent with goals was not exhibited)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%
Unhealed pressure ulcer	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if patient has at least one unhealed pressure ulcer at stage two or higher or designated as unstageable; 0= if patient does not have at least one unhealed pressure ulcer at stage 2 or higher or designated as unstageable)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%

Outcome Name	Measurement Period	Technical Definition	Eligible Sample	Average Percent Non-missing
Incontinence	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the resident was incontinent of urine during seven or more episodes, or if the resident was incontinent of bowel more than once. 0= if the resident was incontinent of urine less than seven episodes and incontinent of stool once or no times. This includes incontinence of any amount of urine or stool during daytime or nighttime)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	98%
Active diagnosis of Alzheimer's	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the resident had an active diagnosis of Alzheimer's; 0= if the resident did not have an active diagnosis of Alzheimer's)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%
Active diagnosis of dementia	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the resident had an active diagnosis of dementia; 0= if the resident did not have an active diagnosis of dementia)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%
Short of breath due to exertion (e.g., walking, bathing, or transferring), sitting at rest, or lying flat	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if shortness of breath or trouble breathing is present when the resident lies flat, sits at rest, or is engaging in activity, or if the resident avoids activity or is unable to engage in activity because of shortness of breath. Shortness of breath could be present during activity as limited as turning or moving in bed during daily care or with more strenuous activity such as transferring, walking, or bathing; 0= if the resident reports no shortness of breath or trouble breathing and the medical record and staff interviews indicate that shortness of breath appears to be absent or well controlled with current medication)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	97%
Require special treatment	7-day lookback period (1st week of SNF stay)	Binary outcome (1= if the resident received special treatment, such as chemotherapy, radiation, oxygen therapy, suctioning, tracheostomy care, ventilator or respirator, BiPAP/CPAP (sleep apnea therapy), IV medications, transfusions, dialysis, hospice care, respite care, or isolation or quarantine for active infections disease (does not include standard body/fluid precautions); 0= if the resident received none of the above)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	99%

Exhibit M.2: Home Health Agency (HHA) Outcome and Assessment Information Set (OASIS) Outcome Definitions

Outcome Name	Measurement Period	Technical Definition	Eligible Sample	Average Percent Non-missing
Poor overall status	Within 5 days of the start of care date	Binary outcome (1= if the patient is likely to remain in fragile health and have ongoing high risk(s) of serious complications and death, or if the patient has serious progressive conditions that could lead to death within a year; 0= if the patient is temporarily facing high health risk(s) but is likely to return to being stable without heightened risk(s) for serious complications and death (beyond those typical of the patient's age), or the patient is stable with no heightened risk(s) for serious complications and death (beyond those typical of the patient's age))	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Require use of bedside commode or are totally dependent in toileting	Within 5 days of the start of care date	Binary outcome (1= if patient is unable to get to and from the toilet but is able to use a bedside commode (with or without assistance), or is unable to get to and from the toilet or bedside commode but is able to use a bedpan/urinal independently, or is totally dependent in toileting; 0= if patient is able to get to and from the toilet when reminded, assisted, or supervised by another person, or independently with or without a device)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Require assistance transferring or are unable to transfer (e.g., from bed to wheelchair)	Within 5 days of the start of care date	Binary outcome (1= if patient is able to bear weight and pivot during the transfer process but is unable to transfer self, or requires more assistance transferring, or is bedfast; 0= if patient is able to transfer with minimal human assistance or with use of an assistive device, or if patient is able to transfer independently)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Require walker or more assistance ambulating	Within 5 days of the start of care date	Binary outcome (1= if patient requires use of a two-handed device (e.g., walker or crutches) to walk alone on a level surface and/or requires human supervision or assistance to negotiate stairs, steps, or uneven surfaces, or requires more assistance ambulating, or is chairfast or bedfast; 0= if patient is able to independently walk on even and uneven surfaces and negotiate stairs with or without railings with the use of a one-handed device (e.g., cane, single crutch, hemi-walker) or independently)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Dependent in maintaining self-care	Within 5 days of the start of care date	Binary outcome (1= if patient is dependent in grooming, dressing, bathing, and toileting hygiene; 0= if patient needs some help or is independent in grooming, dressing, bathing, and toileting hygiene)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%

Outcome Name	Measurement Period	Technical Definition	Eligible Sample	Average Percent Non-missing
Dependent in ambulating	Within 5 days of the start of care date	Binary outcome (1= if patient is dependent in ambulating; 0= if patient needs some help or is independent in ambulating)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Dependent in transferring	Within 5 days of the start of care date	Binary outcome (1= if patient is dependent in transferring; 0= if patient needs some help or is independent in transferring)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Impaired vision or hearing	Within 5 days of the start of care date	Binary outcome (1= if patient cannot locate objects without hearing or touching them, if patient is absent of useful hearing, or if patient is nonresponsive; 0= if patient cannot see medication labels or newsprint, but can see obstacles in path, and the surrounding layout; can count fingers at arm's length or sees adequately in most situations; or if patient has difficulty hearing in some environments, or speaker may need to increase volume or speak distinctly, or hears normal conversation without difficulty)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Impaired cognition	Within 5 days of the start of care date	Binary outcome (1= if patient requires assistance and some direction in specific situations (e.g., on all tasks involving shifting of attention), or consistently requires a low stimulus environment due to distractibility, or requires assistance more often, or is totally dependent due to disturbances such as constant disorientation, coma, persistent vegetative state, or delirium; 0= if patient requires prompting (cuing, repetition, reminders) only under stressful or unfamiliar conditions, or is independently alert/oriented)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
One or more stage two or higher unhealed pressure ulcer(s)	Within 5 days of the start of care date	Binary outcome (1= if patient has at least one unhealed pressure ulcer at stage two or higher or designated as unstageable; 0= if patient does not have at least one unhealed pressure ulcer at stage 2 or higher or designated as unstageable)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%

Outcome Name	Measurement Period	Technical Definition	Eligible Sample	Average Percent Non-missing
Short of breath from moderate to no exertion	Within 5 days of the start of care date	Binary outcome (1= if patient is dyspneic or noticeably short of breath with moderate exertion, e.g. while dressing, using commode or bedpan, walking distances less than 20 feet, or with minimal or no exertion; 0= if patient is short of breath when walking more than 20 feet, climbing stairs, or is not short of breath)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Not likely to receive assistance in ADL	Within 5 days of the start of care date	Binary outcome (1= if non-agency caregiver(s) is unlikely to provide assistance with activities of daily living (ADLs, e.g., transfer/ambulation, bathing, dressing, toileting, eating/feeding) or it is unclear if they will provide assistance, or no non-agency caregiver(s) is available; 0= if non-agency caregiver(s) currently provides assistance or needs training/supportive services to provide assistance, or no assistance is needed)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Caregiver needs training to provide supervision and safety, is unlikely to provide help, or is not present	Within 5 days of the start of care date	Binary outcome (1= if non-agency caregiver(s) is unlikely to provide assistance with supervision and safety (for example, due to cognitive impairment) or it is unclear if they will provide assistance, or no non-agency caregiver(s) is available; 0= if non-agency caregiver(s) currently provides assistance or needs training/supportive services to provide assistance, or no assistance is needed)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Incontinence	Within 5 days of the start of care date	Binary outcome (1= if patient is incontinent or requires a urinary catheter (i.e., external, indwelling, intermittent, suprapubic), or if patient has bowel incontinence at least once weekly; 0= no incontinence of urine or catheter (includes anuria or ostomy for urinary drainage), and patient never has bowel incontinence, or patient has ostomy for bowel elimination)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%
Depressive symptoms	14 days prior to the assessment date (assessment is administered within 5 days of the start of care date)	Binary outcome (1= if patient was screened using the PHQ-2 scale and had little interest or pleasure in doing things more than half the days or was feeling down, depressed, or hopeless more than half the days over the last two weeks; or if the patient was screened with a different standardized assessment and meets criteria for further evaluation for depression; 0= if the patient was screened using the PHQ-2 scale and had little interest or pleasure in doing things less than half the days or was feeling down, depressed, or hopeless less than half the days over the last two weeks; or was screened with a different standardized assessment and the patient does not meet criteria for further evaluation for depression)	Beneficiaries with a valid admission or readmission assessment. Note that some assessments are missing a response for certain outcomes presented in this report.	88%

Appendix N: Net Savings to Medicare

Exhibit N.1: Impact of BPCI on Medicare Payments, by Clinical Episode, Model 2 ACH, Q4 2013 - Q3 2016

Clinical Episode	Number of Episodes Q4 2013 - Q3 2016	DiD Savings Estimate	90% LCI of DiD Savings Estimate	90% UCI of DiD Savings Estimate	NPRA per case	Net Savings to Medicare per case
Major joint replacement of the lower extremity	97,217	$1,222	$943	$1,501	$763	$459
Congestive heart failure	31,498	$400	($28)	$827	($70)	$469
Sepsis	25,671	$413	($372)	$1,198	$438	($26)
Simple pneumonia and respiratory infections	22,295	$203	($225)	$632	$334	($131)
Chronic obstructive pulmonary disease, bronchitis, asthma	17,964	$395	($33)	$824	$100	$295
Stroke	11,208	$297	($543)	$1,136	$478	($182)
Urinary tract infection	7,854	$860	$192	$1,527	$1,190	($330)
Hip & femur procedures except major joint	7,381	$1,832	$1,057	$2,607	$1,919	($87)
Renal failure	7,356	$668	($86)	$1,422	$527	$141
Medical non-infectious orthopedic	6,446	$1,884	$989	$2,780	$1,328	$556
Cardiac arrhythmia	5,973	$177	($431)	$784	($151)	$327
Cellulitis	5,370	$478	($299)	$1,255	$545	($67)
Acute myocardial infarction	5,276	$281	($673)	$1,236	($124)	$405
Percutaneous coronary intervention	4,633	($230)	($1,030)	$570	$416	($646)
Other respiratory	4,632	$446	($714)	$1,605	$780	($334)
Gastrointestinal hemorrhage	4,339	$259	($537)	$1,054	$650	($391)
Esophagitis, gastroenteritis and other digestive disorders	4,001	$813	($46)	$1,672	$78	$735
Cardiac valve	3,926	$1,268	($268)	$2,804	$1,291	($23)
Spinal fusion (non-cervical)	3,376	$1,181	($196)	$2,558	$626	$555
Coronary artery bypass graft	3,180	$571	($1,173)	$2,314	$1,367	($797)
Major bowel procedure	2,969	$357	($1,085)	$1,799	$694	($337)
Nutritional and metabolic disorders	2,666	($1,045)	($2,210)	$120	($94)	($951)
Gastrointestinal obstruction	1,712	($610)	($1,895)	$675	$207	($818)
Other vascular surgery	1,555	($726)	($2,897)	$1,445	($230)	($496)
Diabetes	1,381	$974	($675)	$2,622	$199	$775
Syncope & collapse	1,339	$96	($1,272)	$1,463	$691	($596)
Major joint replacement of the upper extremity	1,329	($294)	($1,695)	$1,107	$1,054	($1,348)

Clinical Episode	Number of Episodes Q4 2013 - Q3 2016	DiD Savings Estimate	90% LCI of DiD Savings Estimate	90% UCI of DiD Savings Estimate	NPRA per case	Net Savings to Medicare per case
Cervical spinal fusion	1,159	($812)	($2,392)	$767	($21)	($792)
Revision of the hip or knee	1,141	($332)	($2,295)	$1,630	$592	($925)
Transient ischemia	1,086	$2,541	$995	$4,087	$1,118	$1,423
Fractures of the femur and hip or pelvis	1,081	$813	($1,136)	$2,761	$1,757	($945)
Lower extremity and humerus procedure except hip, foot, femur	1,061	$309	($1,939)	$2,558	$1,281	($972)

Note: The DiD savings estimates reflect total Medicare allowed Part A and B payments for the qualifying inpatient stay plus 90 day post discharge period. A positive DiD savings estimate indicates an estimated decrease in Medicare allowed payments per clinical episode. A negative DiD savings estimate indicates an estimated increase in Medicare allowed payments per clinical episode. The average NPRA per episode is calculated as the target price minus the actual Medicare episode payments, divided by the total number of episodes. A positive average NPRA is the amount per episode paid by Medicare to participants. A negative average NPRA is the amount per episode that participants repaid to Medicare. Results are sorted in order of episode volume. UCI: upper confidence interval; LCI: lower confidence interval. Shading of Net Savings to Medicare per case indicates that NPRA and the DiD savings estimate were statistically significant at the 10% level. Light green shading signifies a positive value that is significant at the 10% level; light orange signifies a negative value that is significant at the 10% level.

Source: The DiD savings estimates are based on Lewin analysis of Medicare claims and enrollment data for episodes that began in Q4 2011 through Q3 2016 for BPCI and comparison providers. The average NPRA per episode is based on Lewin analysis of reconciliation data from the BPCI program for BPCI episodes that began in Q4 2013 through Q3 2016.

Exhibit N.2: Impact of BPCI on Medicare Payments, by Clinical Episode, Model 3 SNF, Q4 2013 - Q3 2016

Clinical Episode	Number of Episodes Q4 2013 - Q3 2016	DiD Savings Estimate	90% LCI of DiD Savings Estimate	90% UCI of DiD Savings Estimate	NPRA per case	Net Savings to Medicare per case
Major joint replacement of the lower extremity	5,673	$1,731	$909	$2,554	$1,875	($144)
Sepsis	3,834	$1,715	$426	$3,004	$1,520	$195
Congestive heart failure	2,632	$978	($440)	$2,396	$1,031	($53)
Simple pneumonia and respiratory infections	2,545	$1,717	$387	$3,047	$1,930	($213)
Hip & femur procedures except major joint	2,001	$2,042	$677	$3,407	$3,094	($1,053)
Medical non-infectious orthopedic	1,991	$1,596	$102	$3,091	$2,429	($833)
Urinary tract infection	1,795	$1,752	$378	$3,125	$2,063	($311)
Renal failure	1,310	($1,181)	($3,165)	$803	$1,449	($2,630)
Stroke	1,211	($1,826)	($4,133)	$481	$603	($2,429)
Chronic obstructive pulmonary disease, bronchitis, asthma	820	($1,802)	($4,224)	$620	$1,365	($3,167)
Other respiratory	670	($1,652)	($5,223)	$1,919	$934	($2,585)

Note: The DiD savings estimates reflect total Medicare allowed Part A and B payments for the qualifying inpatient stay plus 90 day post discharge period. A positive DiD savings estimate indicates an estimated decrease in Medicare allowed payments per clinical episode. A negative DiD savings estimate indicates an estimated increase in Medicare allowed payments per clinical episode. The average NPRA per episode is calculated as the target price minus the actual Medicare episode payments, divided by the total number of episodes. A positive average NPRA is the amount per episode paid by Medicare to participants. A negative average NPRA is the amount per episode that participants repaid to Medicare. Results are sorted in order of episode volume. UCI: upper confidence interval; LCI: lower confidence interval. Shading of Net Savings to Medicare per case indicates that NPRA and the DiD savings estimate were statistically significant at the 10% level. Light green shading signifies a positive value that is significant at the 10% level; light orange signifies a negative value that is significant at the 10% level.

Source: The DiD savings estimates are based on Lewin analysis of Medicare claims and enrollment data for episodes that began in Q4 2011 through Q3 2016 for BPCI and comparison providers. The average NPRA per episode is based on Lewin analysis of reconciliation data from the BPCI program for BPCI episodes that began in Q4 2013 through Q3 2016.

Exhibit N.3: Impact of BPCI on Medicare Payments, by Clinical Episode, Model 3 HHA, Q4 2013 - Q3 2016

Clinical Episode	Number of Episodes Q4 2013 - Q3 2016	DiD Savings Estimate	90% LCI of DiD Savings Estimate	90% UCI of DiD Savings Estimate	NPRA per case	Net Savings to Medicare per case
Congestive heart failure	3,990	$557	($334)	$1,448	($118)	$675
Major joint replacement of the lower extremity	2,897	($131)	($773)	$511	$1,188	($1,319)
Simple pneumonia and respiratory infections	1,182	($1,063)	($2,786)	$660	$23	($1,086)

Note: The DiD savings estimates reflect total Medicare allowed Part A and B payments for the qualifying inpatient stay plus 90 day post discharge period. A positive DiD savings estimate indicates an estimated decrease in Medicare allowed payments per clinical episode. A negative DiD savings estimate indicates an estimated increase in Medicare allowed payments per clinical episode. The average NPRA per episode is calculated as the target price minus the actual Medicare episode payments, divided by the total number of episodes. A positive average NPRA is the amount per episode paid by Medicare to participants. A negative average NPRA is the amount per episode that participants repaid to Medicare. Results are sorted in order of episode volume. UCI: upper confidence interval; LCI: lower confidence interval. Shading of Net Savings to Medicare per case indicates that NPRA and the DiD savings estimate were statistically significant at the 10% level. Light green shading signifies a positive value that is significant at the 10% level; light orange signifies a negative value that is significant at the 10% level.

Source: The DiD savings estimates are based on Lewin analysis of Medicare claims and enrollment data for episodes that began in Q4 2011 through Q3 2016 for BPCI and comparison providers. The average NPRA per episode is based on Lewin analysis of reconciliation data from the BPCI program for BPCI episodes that began in Q4 2013 through Q3 2016.