



**Office of the Actuary**

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**DATE:** February 23, 2016

**SUBJECT:** Estimated Impact of Two-Midnight Policy Using IDR Data

This memorandum summarizes the Office of the Actuary's financial estimate for the impact of the two-midnight policy that became effective on October 1, 2013. This estimate is based on data from the integrated data repository (IDR).

In our opinion the IDR data is the most appropriate data source to use in developing estimates, mainly because it is continually updated and reflects the most current information. The IDR also reflects the net results of the recent RAC review activities surrounding short-stay inpatient hospital cases. These activities are especially important in the time period being evaluated for the financial estimate, and are not reflected in the publically available data files. Therefore, the financial estimate presented below using the IDR data is more accurate.

**DATA**

The source for the inpatient hospital claims data is the IDR database. There were several trims that were made to this data. First, all claims from Maryland hospitals were removed. Next, only claims with the claim type code equal to 60 were included in order to remove MA encounter claims. Also, in order to exclude non-IPPS hospital and units, the third digit of the provider number must be equal to '0.' In addition, to remove outlier claims, claims with the total paid amount equal to 0 were removed. Lastly, only final action claims were included.

The outpatient observation stay data is also from the IDR database. Similar to the inpatient hospital trims, claims data from Maryland hospitals were removed and, in order to remove non-IPPS hospitals, the third digit of the provider number must be equal to '0.' Next, only claims with the claim type code equal to 40 and claims with a paid amount greater than 0 were included. In order to include only outpatient observation stays in the analysis, the revenue center code must be equal to '0760' or '0762.' Lastly, only final action claims were included.

The outpatient procedure stay data is also from the IDR database. Again, data from Maryland hospitals were removed and, in order to remove non-IPPS hospitals, the third digit of the provider number must be equal to '0.' Next, only claims with the claim type code equal to 40 were included. Then, claims with revenue center codes equal to '0760' or '0762' were removed, since these are included in the observation stay data). Only claims where the length of stay was greater than 0 and less than 7 days were included and if the earliest service date of the principal procedure occurred more than 5 days before or on the same date as the claim through date then it was removed. In addition, only claims with a paid amount greater than 0 and those with an APC code for a major procedure were included (see appendix A for the list of the relevant APCs). Lastly, only final action claims were included.

The inpatient claims were summarized by the length of stay of the discharge (each claim was equal to 1 discharge except in the case of a discharge status code equal to 30 which is used for claims where the patient is still in the hospital), and the outpatient observation stay and outpatient procedure stay claims were summarized by the length of stay of the outpatient stay. In all cases, the length of stay was computed by taking the difference between the claim from and claim thru dates. The total amount Medicare paid was also summarized, and this is the claim payment amount field for both inpatient hospital and outpatient hospital claims.

Inpatient hospital discharges						
LOS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
0	145,057	150,591	139,082	133,491	106,613	95,981
1	1,116,441	1,096,863	1,017,098	983,547	810,174	753,311
2	1,605,018	1,610,293	1,572,114	1,534,403	1,522,461	1,548,327
3	1,876,607	1,898,394	1,871,544	1,806,512	1,760,248	1,751,174
4	1,349,469	1,354,077	1,338,152	1,299,751	1,270,588	1,287,714
5+	4,093,812	4,069,190	4,027,197	3,946,911	3,837,453	3,902,663
Total	10,186,404	10,179,408	9,965,187	9,704,615	9,307,537	9,339,170

Inpatient hospital Medicare paid amount						
LOS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
0	938,232,172	991,205,094	942,495,802	958,428,198	831,067,932	766,221,972
1	7,694,083,016	7,594,944,811	7,066,373,296	7,157,422,357	6,193,221,523	5,918,011,635
2	10,624,950,999	10,894,452,184	10,918,614,406	11,216,854,098	11,793,122,960	12,162,801,940
3	14,411,111,617	14,835,830,976	14,952,799,722	15,032,795,438	15,204,596,842	15,009,323,293
4	11,213,270,034	11,324,781,784	11,403,788,920	11,457,752,468	11,559,813,397	11,712,942,428
5+	58,069,026,184	57,776,534,444	58,234,262,009	58,884,338,184	57,608,667,173	57,796,894,549
Total	102,950,674,021	103,417,749,293	103,518,334,155	104,707,590,742	103,190,489,827	103,366,195,816

Outpatient hospital observation stays						
LOS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
0	122,910	124,000	129,662	130,839	138,518	148,163
1	769,435	814,397	883,813	922,985	1,096,189	1,113,327
2	325,453	360,410	415,977	462,910	470,210	465,781
3	97,547	109,179	129,447	151,692	129,802	125,084
4	33,515	36,948	43,301	50,900	40,756	39,207
5+	43,102	44,826	49,026	52,807	46,921	46,229
Total	1,391,962	1,489,760	1,651,226	1,772,133	1,922,396	1,937,791

Outpatient hospital observation Medicare paid amount						
LOS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
0	122,969,967	124,155,294	129,714,602	131,787,145	160,675,386	177,240,424
1	1,414,723,271	1,462,758,527	1,538,706,340	1,644,955,249	2,170,141,857	2,246,887,114
2	559,422,715	620,565,764	717,890,196	819,815,926	938,930,654	952,652,006
3	196,938,166	217,735,194	258,853,083	307,946,379	295,290,880	287,557,892
4	80,632,013	86,169,604	99,102,535	116,731,462	104,310,453	98,775,604
5+	133,743,721	137,174,817	146,762,652	156,451,464	151,763,402	147,190,556
Total	2,508,429,854	2,648,559,200	2,891,029,408	3,177,687,625	3,821,112,631	3,910,303,596

Outpatient hospital procedure stays						
LOS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
1	266,377	290,938	310,696	315,569	351,286	351,711
2	39,053	42,260	47,713	48,465	49,266	46,949
3	16,906	18,092	19,347	19,943	18,715	17,714
4	11,030	11,665	12,262	12,081	11,779	11,111
5	7,314	7,752	8,204	7,914	7,442	6,842
6	5,862	6,286	6,673	6,560	6,342	6,088
Total	346,542	376,993	404,895	410,532	444,830	440,415

Outpatient hospital procedure Medicare paid amount						
LOS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
1	1,556,009,417	1,753,188,096	1,948,705,885	2,058,363,222	2,445,509,935	2,602,321,227
2	204,802,988	227,525,148	259,207,031	267,428,013	284,058,540	278,883,722
3	81,362,676	92,071,168	99,599,986	102,936,075	102,072,484	99,656,426
4	53,499,394	59,388,889	63,545,845	64,360,906	65,454,139	62,499,530
5	35,460,342	39,422,905	42,972,995	41,378,723	40,742,737	39,496,617
6	25,564,298	28,580,986	30,846,366	31,312,182	31,326,537	32,352,786
Total	1,956,699,115	2,200,177,193	2,444,878,108	2,565,779,121	2,969,164,371	3,115,210,308

## **CALCULATION**

Once the summarized data from the IDR were available, we could compute the impact of the two-midnight policy. First, we combined some of the length of stay data. The 0 and 1 day length of stays for inpatient hospital discharges and outpatient hospital observation stays were combined, as were the 5 and 6 day length of stays for outpatient hospital procedure stays. The inpatient hospital discharges, outpatient hospital observation stays, and outpatient hospital procedure stays were then summed to determine the total number of hospital episodes. The distribution of these episodes was tabulated by length of stay and the trend in the distribution was calculated for the period 2010-2013, and then annualized (this is referred to as the CAGR). This annualized trend was multiplied by the number of discharges in 2013 to estimate the number of discharges expected to occur in 2014 prior to the two-midnight policy. This estimate was compared to the actual number of discharges in 2014, and this is assumed to be the impact of the two-midnight policy. This same analysis was done for 2015.

Number of hospital episodes						
LOS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
0-1	2,420,220	2,476,789	2,480,351	2,486,431	2,502,780	2,462,493
2	1,969,524	2,012,963	2,035,804	2,045,778	2,041,937	2,061,057
3	1,991,060	2,025,665	2,020,338	1,978,147	1,908,765	1,893,972
4	1,394,014	1,402,690	1,393,715	1,362,732	1,323,123	1,338,032
5+	4,150,090	4,128,054	4,091,100	4,014,192	3,898,158	3,961,822
Total	11,924,908	12,046,161	12,021,308	11,887,280	11,674,763	11,717,376

Inpatient portion						
LOS	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
0-1	0.521233	0.503658	0.466136	0.449254	0.366307	0.344891
2	0.814927	0.799962	0.772232	0.750034	0.745596	0.751230
3	0.942517	0.937171	0.926352	0.913234	0.922192	0.924604
4	0.968046	0.965343	0.960133	0.953783	0.960295	0.962394
5+	0.986439	0.985740	0.984380	0.983239	0.984427	0.985068

2014 Calculation				
LOS	CAGR 2010-2013	2014 projected portion	2014 projected discharges	Actual – expected
0-1	0.951670	0.4275	1,070,042	-153,255
2	0.972719	0.7296	1,489,741	32,720
3	0.989535	0.9037	1,724,908	35,340
4	0.995065	0.9491	1,255,744	14,844
5+	0.998917	0.9822	3,828,673	8,780
Total				-61,570

2015 Calculation				
LOS	CAGR 2010-2013	2015 projected portion	2015 projected discharges	Actual – expected
0-1	0.951670	0.4069	1,001,935	-152,643
2	0.972719	0.7097	1,462,668	85,659
3	0.989535	0.8942	1,693,628	57,546
4	0.995065	0.9444	1,263,627	24,087
5+	0.998917	0.9811	3,886,989	15,674
Total				30,322

## **RESULTS**

To estimate the financial impact, we analyzed the difference between the 2014/2015 cost per discharge and the 2014/2015 cost per outpatient stay for each length of stay. These results were multiplied by the difference between the actual and expected number of discharges to estimate the financial impact of the two-midnight policy. This estimate was then divided by the total amount of inpatient hospital spending and resulted in a factor of -0.13 percent in 2014 (-139,033/103,190,490), which is comparable to the 0.2 percent factor that was estimated originally. For 2015, the result was a factor of +0.38 percent (394,557/103,366,196).

2014 Financial impact				
LOS	Outpatient cost per stay 2014	Inpatient discharge cost per case 2014	Difference	Total Impact
0-1	3,011.57	7,661.86	4,650.29	-712,679.57
2	2,354.27	7,746.09	5,391.82	176,421.40
3	2,675.54	8,637.76	5,962.22	210,706.71
4	3,231.46	9,098.00	5,866.55	87,080.93
5+	3,687.22	15,012.21	11,324.99	99,437.55
Total				-139,032.98

2015 Financial impact				
LOS	Outpatient cost per stay 2015	Inpatient discharge cost per case 2015	Difference	Total Impact
0-1	3,115.82	7,870.36	4,754.54	-725,748.98
2	2,401.92	7,855.45	5,453.53	467,142.98
3	2,711.62	8,571.01	5,859.38	337,183.59
4	3,205.12	9,095.92	5,890.80	141,892.95
5+	3,702.56	14,809.60	11,107.04	174,086.92
Total				394,557.47

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## Appendix A

### List of APCs Containing Major Procedures For Purposes of the Two-Midnight Estimate

APC	APC Description
0005	Level II Needle Biopsy/Aspiration Except Bone Marrow
0007	Level II Incision & Drainage
0008	Level III Incision and Drainage
0012	Level I Debridement & Destruction
0017	Level V Debridement & Destruction
0019	Level I Excision/ Biopsy
0020	Level II Excision/ Biopsy
0021	Level III Excision/ Biopsy
0022	Level IV Excision/ Biopsy
0028	Level I Breast Surgery
0029	Level II Breast Surgery
0030	Level III Breast Surgery
0037	Level IV Needle Biopsy/Aspiration Except Bone Marrow
0041	Level I Arthroscopy
0042	Level II Arthroscopy
0045	Bone/Joint Manipulation Under Anesthesia
0047	Arthroplasty without Prosthesis
0048	Level I Arthroplasty or Implantation with Prosthesis
0049	Level I Musculoskeletal Procedures Except Hand and Foot
0050	Level II Musculoskeletal Procedures Except Hand and Foot
0051	Level III Musculoskeletal Procedures Except Hand and Foot
0052	Level IV Musculoskeletal Procedures Except Hand and Foot
0053	Level I Hand Musculoskeletal Procedures
0054	Level II Hand Musculoskeletal Procedures
0055	Level I Foot Musculoskeletal Procedures
0056	Level II Foot Musculoskeletal Procedures
0057	Bunion Procedures
0062	Level I Treatment Fracture/Dislocation
0063	Level II Treatment Fracture/Dislocation
0064	Level III Treatment Fracture/Dislocation
0069	Thoracoscopy
0074	Level IV Endoscopy Upper Airway
0075	Level V Endoscopy Upper Airway
0076	Level I Endoscopy Lower Airway
0080	Diagnostic Cardiac Catheterization
0082	Coronary or Non-Coronary Atherectomy
0083	Coronary Angioplasty, Valvuloplasty, and Level I Endovascular Revascularization
0085	Level II Electrophysiologic Procedures
0086	Level III Electrophysiologic Procedures
0088	Thrombectomy
0089	Insertion/Replacement of Permanent Pacemaker and Electrodes
0090	Level I Insertion/Replacement of Permanent Pacemaker
0091	Level II Vascular Ligation
0092	Level I Vascular Ligation
0093	Vascular Reconstruction/Fistula Repair without Device
0103	Miscellaneous Vascular Procedures
0104	Transcatheter Placement of Intracoronary Stents
0105	Repair/Revision/Removal of Pacemakers, AICDs, or Vascular Devices

APC	APC Description
0106	Insertion/Replacement of Pacemaker Leads and/or Electrodes
0107	Insertion of Cardioverter-Defibrillator Pulse Generator
0108	Insertion/Replacement/Repair of Cardioverter-Defibrillator System
0113	Excision Lymphatic System
0114	Thyroid/Lymphadenectomy Procedures
0115	Cannula/Access Device Procedures
0121	Level I Tube or Catheter Changes or Repositioning
0130	Level I Laparoscopy
0131	Level II Laparoscopy
0132	Level III Laparoscopy
0135	Level III Skin Repair
0136	Level IV Skin Repair
0137	Level V Skin Repair
0148	Level I Anal/Rectal Procedures
0149	Level III Anal/Rectal Procedures
0150	Level IV Anal/Rectal Procedures
0152	Level I Percutaneous Abdominal and Biliary Procedures
0153	Peritoneal and Abdominal Procedures
0154	Hernia/Hydrocele Procedures
0160	Level I Cystourethroscopy and other Genitourinary Procedures
0161	Level II Cystourethroscopy and other Genitourinary Procedures
0162	Level III Cystourethroscopy and other Genitourinary Procedures
0163	Level IV Cystourethroscopy and other Genitourinary Procedures
0166	Level I Urethral Procedures
0168	Level II Urethral Procedures
0169	Lithotripsy
0174	Level IV Laparoscopy
0181	Level II Male Genital Procedures
0183	Level I Male Genital Procedures
0184	Prostate Biopsy
0190	Level I Hysteroscopy
0192	Level IV Female Reproductive Proc
0193	Level V Female Reproductive Proc
0195	Level VI Female Reproductive Procedures
0202	Level VII Female Reproductive Procedures
0208	Laminotomies and Laminectomies
0220	Level I Nerve Procedures
0221	Level II Nerve Procedures
0224	Implantation of Catheter/Reservoir/Shunt
0227	Implantation of Drug Infusion Device
0229	Level II Endovascular Revascularization of the Lower Extremity
0233	Level III Anterior Segment Eye Procedures
0234	Level IV Anterior Segment Eye Procedures
0237	Level II Posterior Segment Eye Procedures
0238	Level I Repair and Plastic Eye Procedures
0239	Level II Repair and Plastic Eye Procedures
0240	Level III Repair and Plastic Eye Procedures
0241	Level IV Repair and Plastic Eye Procedures
0242	Level V Repair and Plastic Eye Procedures
0243	Strabismus/Muscle Procedures
0244	Corneal and Amniotic Membrane Transplant

APC	APC Description
0246	Cataract Procedures with IOL Insert
0249	Cataract Procedures without IOL Insert
0252	Level III ENT Procedures
0253	Level IV ENT Procedures
0254	Level V ENT Procedures
0255	Level II Anterior Segment Eye Procedures
0256	Level VI ENT Procedures
0259	Level VII ENT Procedures
0293	Level VI Anterior Segment Eye Procedures
0319	Level III Endovascular Revascularization of the Lower Extremity
0384	GI Procedures with Stents
0387	Level II Hysteroscopy
0415	Level II Endoscopy Lower Airway
0419	Level II Upper GI Procedures
0422	Level III Upper GI Procedures
0423	Level II Percutaneous Abdominal and Biliary Procedures
0425	Level II Arthroplasty or Implantation with Prosthesis
0427	Level II Tube or Catheter Changes or Repositioning
0428	Level III Sigmoidoscopy and Anoscopy
0429	Level V Cystourethroscopy and other Genitourinary Procedures
0434	Cardiac Defect Repair
0648	Level IV Breast Surgery
0651	Complex Interstitial Radiation Source Application
0653	Vascular Reconstruction/Fistula Repair with Device
0654	Level II Insertion/Replacement of Permanent Pacemaker
0655	Insertion/Replacement/Conversion of a Permanent Dual Chamber Pacemaker or Pacing
0656	Transcatheter Placement of Intracoronary Drug-Eluting Stents
0672	Level III Posterior Segment Eye Procedures
0673	Level V Anterior Segment Eye Procedures
0674	Prostate Cryoablation
0687	Revision/Removal of Neurostimulator Electrodes
0688	Revision/Removal of Neurostimulator Pulse Generator Receiver