Medicare Outpatient Hospitals Dataset: A Methodological Overview

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1. Background

The Centers for Medicare & Medicaid Services (CMS) has prepared a public dataset, Medicare Outpatient Hospitals Dataset, with information on services and procedures provided to Medicare beneficiaries by hospital outpatient facilities. The Medicare Outpatient Hospitals Dataset contains estimated hospital-specific charges for the more than 3,000 U.S. hospitals paid under the Medicare Outpatient Prospective Payment System (OPPS) for select Ambulatory Payment Classification (APC) Groups. APCs are the main unit of payment under the OPPS. CMS assigns individual services (Healthcare Common Procedure Coding System [HCPCS] codes) to APCs based on having similar clinical characteristics and costs. The payment rate and copayment calculated for an APC apply to each service within the APC. CMS has structured the Medicare Outpatient Hospitals Dataset to report summarized data for a subset of APCs called comprehensive APCs (C-APC).

On January 1, 2015, CMS implemented C-APCs to consolidate payment for the highest cost device-dependent procedures into a single, global prospective payment rather than paying separate single APC payments for each component of the procedure. With the comprehensive APC policy, CMS intended to align Medicare payment with beneficiaries', physicians', and hospitals' conceptual understanding of a global procedure (e.g. "getting a pacemaker"). Under C-APCs, CMS designates a set of Healthcare Common Procedure Coding System (HCPCS) codes as the primary service and, with few exceptions, bundles all adjunctive services listed on the claim into a single payment for the primary service.[1] C-APCs include intensive procedures such as neurostimulator insertions, cardiac catheterization and stenting, pacemaker and defibrillator placement, and gynecological and orthopedic procedures, among others. In CY 2016, CMS expanded the list of C-APCs beyond device-dependent procedures to also include observation services.

In prior versions of the Medicare Outpatient Hospitals Dataset, CMS reported summarized utilization and spending metrics for single-APCs where it was relatively easy to attribute total hospital charges for packaged services to a given APC. Given that CMS can attribute all adjunct services on the claim not statutorily excluded from packaging to a C-APC, CMS switched to focusing on C-APCs to present a more conceptually cohesive set of services for the Medicare Outpatient Hospitals Dataset. Summarized data are available for calendar years 2015 through 2020. In CY 2015, there were 25 C-APCs that represented 0.7% (736,664) of all OPPS claims and 14.1% ($8.1 billion) of the total Medicare allowed amount billed by OPPS hospitals. By CY 2020, the list of C-APCs expanded to 65 C-APCs[2] and the proportion of all the OPPS hospital services and Medicare allowed amounts represented by these C-APCs rose to 5.3% ($5.2 million) and 35.4% ($23.2 billion) respectively. Appendix Table 1 shows the list of C-APCs included in the PUF data over time.

[1] This description is paraphrased from information in the CY 2014 OPPS final rule. For more detailed information on the development of C-APCs, see Section II.A.2.e, https://www.gpo.gov/fdsys/pkg/FR-2013-12-10/pdf/2013-28737.pdf

[2] The 2020 OPPS claims data actually report 67 distinct APCs, but 2 APCs are suppressed in the reporting due to insufficient sample size.

2. Key Data Sources

The primary data source for the Medicare Outpatient Hospitals Dataset come from the CMS administrative claims data for Medicare beneficiaries enrolled in the fee-for-service program. The 2015 through 2020 data are available from the CMS Chronic Condition Data Warehouse (CCW), a database with 100% of Medicare enrollment and fee-for-service claims data. Service counts, provider charges, Medicare allowed amounts, regular provider payments, and outlier payments are summarized from Part B institutional revenue center claims line data.

Outpatient provider demographics are also incorporated in the Medicare Outpatient Hospitals Dataset and include hospitals' name, complete address and hospital referral region (HRR). The outpatient provider name and address are derived from CMS's Provider of Service (POS) data, a resource that provides characteristics associated with institutional facilities. HRRs are geographic units of analysis based on facility location zip codes that were developed by the Dartmouth Atlas of Health Care to delineate regional health care markets in the United States. [3]

3. Population

The Medicare Outpatient Hospitals Dataset includes data on Medicare fee-for-service beneficiaries from Medicare Outpatient Prospective Payment System (OPPS) providers within 49 of the 50 United States and District of Columbia (excluding Maryland) with a known Hospital Referral Region (HRR) who are billing for comprehensive APCs.[4] To protect the privacy of Medicare beneficiaries, any aggregated records which are derived from 10 or fewer services are excluded from the Medicare Outpatient Hospitals Dataset. Appendix Table 2 details the suppression rate for the different levels of aggregation described in the next section.

4. Classification and Summarization

Detailed Data File

The utilization and spending data in the Medicare Outpatient Hospitals Dataset are aggregated to the following levels:

- Provider identifier, and
- Comprehensive Ambulatory Payment Classification Group.

[3] For additional information on the POS data, please visit http://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/NonIdentifiableDataFiles/ProviderofServicesFile.html. For additional information on HRR, please visit http://www.dartmouthatlas.org/data/region/.

[4] CMS excludes Maryland hospitals because they do not participate in the Medicare OPPS. See Section 6 for more information on this data limitation.

There can be multiple records for a given provider identifier based on the number of distinct C-APCs. In 2016, CMS renumbered the APC codes. Therefore, CY 2015 APC codes have different values from the CY 2016 APC codes. Appendix Table 1 contains a crosswalk between the CY 2015 and CY 2016 and later APC codes.

The Medicare Outpatient Hospitals Dataset reports the number of Medicare fee-for-service beneficiaries, APC services, hospitals' average total estimated submitted charges, the average regular Medicare allowed charges (which includes Medicare provider payments and beneficiary cost-sharing payments), the average regular Medicare provider payments, the number of APC services with outlier payments, and the average Medicare outlier provider payments among those services. The average estimated submitted charges and Medicare payments are provided at the individual hospital level. The actual charges at an individual hospital for an individual service within these APC groups may differ.[5] These metrics are described in more detail in the Data Dictionary.

Summary Tables

Summary tables have been created to supplement the information reported in the Medicare Outpatient Hospitals Dataset. "National and State Summaries of Outpatient Hospital Charge Data" includes beneficiaries, services, average payments and average hospital charges organized by each of the following at the national and state levels:

- APC
- APC/primary HCPCS

The aggregated reports are not restricted to the redacted data reported in the Medicare Outpatient Hospitals Dataset but are aggregated based on all Medicare services associated with the select APC groups. However, if the aggregated data from a particular state, APC or APC/primary HCPCS combination is derived from 10 or fewer services that data are excluded from the Medicare Outpatient Hospitals Dataset summary table. These metrics are described in more detail in the Data Dictionary located.

Given the level of detail in the provider-level files, the provider/APC/primary HCPCS summary results in a large proportion of records, primary HCPCS services, total hospital charges, and Medicare payment amounts being suppressed. Therefore, at this time CMS does not release this level of aggregation as part of the suite of Medicare Outpatient Hospitals Datasets.

[5] For a more complete discussion of the claims criteria used in setting the Medicare payment rates for hospital outpatient services, see the Medicare CY 2020 Outpatient Prospective Payment System (OPPS) Claims Accounting document available on the CMS website at https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalOutpatientPPS/Downloads/CMS-1717-FC-2020-OPPS-Claims-Accounting.pdf.

5. Data Limitations

Although the Medicare Outpatient Hospitals Dataset has a wealth of payment and utilization information about many Medicare Part B services, the dataset also has some limitations that are worth noting.

The data in the Medicare Outpatient Hospitals Dataset may not be representative of a hospital's entire population served. The data in the file only has information for Medicare beneficiaries with fee-for-service coverage, but hospitals typically treat many other patients who do not have that form of coverage. The Medicare Outpatient Hospitals Dataset does not have any information on patients who are not covered by Medicare, such as those with coverage from other federal programs (like the Federal Employees Health Benefits Program or Tricare), those with private health insurance (such as an individual policy or employer-sponsored coverage), or those who are uninsured. Even within Medicare, the Medicare Outpatient Hospitals Dataset does not include information for patients who are enrolled in any form of Medicare Advantage plan. Importantly, the data is limited to only a select number of APCs and thus does not necessarily include all Medicare outpatient procedures from a given hospital.

The file only contains cost and utilization information, and for the reasons described in the preceding paragraph, the volume of procedures presented may not be fully inclusive of all procedures performed by the hospital.

The state of Maryland has a unique waiver that exempts it from Medicare's prospective payment systems for outpatient care. Maryland instead uses an all-payer rate setting commission to determine its payment rates. Therefore, data from Maryland providers are not included in the Medicare Outpatient Hospitals Dataset.

6. Updates

August 2019 Updates:

The Medicare Outpatient Hospitals Dataset and supplemental summary tables have been updated to include the number of Medicare fee-for-service beneficiaries receiving outpatient hospital services. These changes are reflected in data years 2015 through 2017. Additionally, the Medicare Outpatient Hospitals Dataset no longer restricts the sample of providers to those hospitals that also appear in the Medicare Inpatient Hospitals Dataset. Finally, the 2015 through 2017 files use data that has a longer claims maturity period. In other words, the source claims data allows for more time for providers to submit new claims or correct previously submitted claims. Therefore, the 2015 and 2016 datasets released in this version may differ slightly from previously released versions.

January 2019 Updates:

CMS has switched to reporting hospital utilization, charges, and Medicare spending for comprehensive APCs in order to make the Medicare Outpatient Hospitals Dataset more conceptually cohesive. Switching to C-APCs also makes it easier to decide which APCs to include on an annual basis. Under the previous dataset methodology, CMS needed to determine which APCs had claims data that made it clear that packaged services could easily be attributed to a given APC. Going forward, the list of APCs included in the datasets will automatically expand as CMS broadens its C-APC policy. However, since the C-APCs only began in 2015, the new data files no longer have earlier years of data.

7. Appendix A: Medicare Outpatient Hospitals Dataset C-APC Trends and Suppression Rates

Appendix Table 1. Number of Primary HCPCS Services by Comprehensive APC and Year

APC	APC (Previous Code)	APC Description	2015	2016	2017	2018	2019	2020
5093	0648	Level 3 Breast/Lymphatic Surgery and Related Procedures	6,140	6,213	2,805	2,840	4,699	4,216
5166	0259	Cochlear Implant Procedure	2,813	3,072	3,351	3,643	3,651	2,962
5191	0083	Level 1 Endovascular Procedures	108,326	109,639	382,760	350,463	352,480	272,637
5192	0229	Level 2 Endovascular Procedures	185,857	186,524	87,610	114,841	113,929	104,078
5193	0319	Level 3 Endovascular Procedures	46,742	50,952	202,820	239,522	183,874	152,733
5211	0084	Level 1 Electrophysiologic Procedures	1,271	934	739	622	515	343
5212	0085	Level 2 Electrophysiologic Procedures	7,946	8,161	7,946	7,668	6,907	6,531
5213	0086	Level 3 Electrophysiologic Procedures	49,105	56,027	61,131	67,818	75,028	67,953
5222	0090	Level 2 Pacemaker and Similar Procedures	32,328	35,842	37,288	40,906	39,357	30,589
5223	0089	Level 3 Pacemaker and Similar Procedures	86,655	85,293	88,606	68,477	77,045	64,254
5224	0655	Level 4 Pacemaker and Similar Procedures	8,464	8,662	8,583	9,577	11,076	10,247
5231	0107	Level 1 ICD and Similar Procedures	14,809	14,532	14,395	12,221	9,985	8,409
5232	0108	Level 2 ICD and Similar Procedures	49,138	50,529	45,543	40,311	36,777	32,520
5331	0384	Complex GI Procedures	19,779	21,035	22,121	27,636	28,442	25,575
5376	0385	Level 6 Urology and Related Services	10,155	5,898	10,404	12,620	15,490	13,709
5377	0386	Level 7 Urology and Related Services	7,804	8,041	10,080	8,870	8,534	6,917
5415	0202	Level 5 Gynecologic Procedures	33,858	28,641	28,056	27,332	26,071	20,467
5462	0061	Level 2 Neurostimulator and Related Procedures	12,592	14,202	15,162	16,831	16,500	13,378
5463	0039	Level 3 Neurostimulator and Related Procedures	13,038	13,525	14,357	14,133	13,919	12,087
5464	0318	Level 4 Neurostimulator and Related Procedures	15,551	18,252	20,386	22,902	22,261	17,885
5471	0227	Implantation of Drug Infusion Device	5,267	5,191	5,203	5,328	5,269	4,143
5493	0293	Level 3 Intraocular Procedures	153	271	167	141	125	809
5494	0351	Level 4 Intraocular Procedures	38	14	76	100	97	--
5124	0425	Level 4 Musculoskeletal Procedures	13,752	46,595	--	--	--	--
5631	0067	Single Session Cranial Stereotactic Radiosurgery	9,971	--	--	--	--	--
5165	--	Level 5 ENT Procedures	--	36,610	39,414	46,402	47,067	33,161

APC	APC (Previous Code)	APC Description	2015	2016	2017	2018	2019	2020
5361	--	Level 1 Laparoscopy and Related Services	--	177,629	189,606	188,919	190,686	160,470
5362	--	Level 2 Laparoscopy and Related Services	--	44,133	49,685	66,945	73,252	66,571
5375	--	Level 5 Urology and Related Services	--	157,429	192,628	200,701	145,426	128,438
5416	--	Level 6 Gynecologic Procedures	--	8,964	9,709	9,761	9,840	7,642
5492	--	Level 2 Intraocular Procedures	--	60,524	74,994	77,202	77,231	61,592
5627	--	Level 7 Radiation Therapy	--	10,174	11,413	11,264	11,290	10,204
5881	--	Ancillary Outpatient Services When Patient Dies	--	326	361	403	371	389
8011	--	Comprehensive Observation Services	--	1,471,155	1,462,810	1,429,341	1,431,035	1,022,352
5123	--	Level 3 Musculoskeletal Procedures	--	169,272	--	--	--	--
5125	--	Level 5 Musculoskeletal Procedures	--	18,633	--	--	--	--
5072	--	Level 2 Excision/ Biopsy/ Incision and Drainage	--	--	440,836	449,486	457,485	330,916
5073	--	Level 3 Excision/ Biopsy/ Incision and Drainage	--	--	64,490	62,429	62,330	112,390
5091	--	Level 1 Breast/Lymphatic Surgery and Related Procedures	--	--	58,111	57,192	57,243	48,758
5092	--	Level 2 Breast/Lymphatic Surgery and Related Procedures	--	--	74,504	65,841	64,427	55,604
5094	--	Level 4 Breast/Lymphatic Surgery and Related Procedures	--	--	3,321	3,502	3,420	3,112
5112	--	Level 2 Musculoskeletal Procedures	--	--	89,792	106,399	93,610	77,679
5113	--	Level 3 Musculoskeletal Procedures	--	--	187,336	166,204	167,445	128,785
5114	--	Level 4 Musculoskeletal Procedures	--	--	224,763	223,876	217,812	188,797
5115	--	Level 5 Musculoskeletal Procedures	--	--	50,947	118,129	147,069	232,467
5116	--	Level 6 Musculoskeletal Procedures	--	--	3,817	4,775	5,724	4,322
5153	--	Level 3 Airway Endoscopy	--	--	52,763	49,994	49,623	35,914
5154	--	Level 4 Airway Endoscopy	--	--	71,603	71,874	72,752	59,805
5155	--	Level 5 Airway Endoscopy	--	--	22,687	24,411	24,786	19,138
5164	--	Level 4 ENT Procedures	--	--	20,145	16,128	14,939	12,686
5194	--	Level 4 Endovascular Procedures	--	--	50,045	41,663	65,412	55,622
5200	--	Implantation Wireless PA Pressure Monitor	--	--	1,534	2,002	2,551	1,773
5302	--	Level 2 Upper GI Procedures	--	--	221,660	227,807	231,436	190,583
5303	--	Level 3 Upper GI Procedures	--	--	30,406	31,253	31,283	25,868
5313	--	Level 3 Lower GI Procedures	--	--	35,838	25,129	24,232	30,466
5341	--	Abdominal/Peritoneal/Biliary and Related Procedures	--	--	114,085	102,192	97,328	78,997

APC	APC (Previous Code)	APC Description	2015	2016	2017	2018	2019	2020
5373	--	Level 3 Urology and Related Services	--	--	159,081	186,840	198,616	165,370
5374	--	Level 4 Urology and Related Services	--	--	118,105	117,583	168,940	156,402
5414	--	Level 4 Gynecologic Procedures	--	--	51,510	50,444	49,410	36,913
5431	--	Level 1 Nerve Procedures	--	--	148,984	156,324	159,330	145,261
5432	--	Level 2 Nerve Procedures	--	--	3,485	3,544	3,049	2,693
5491	--	Level 1 Intraocular Procedures	--	--	476,210	457,246	428,236	304,554
5503	--	Level 3 Extraocular, Repair, and Plastic Eye Procedures	--	--	36,279	37,159	35,516	22,139
5504	--	Level 4 Extraocular, Repair, and Plastic Eye Procedures	--	--	6,556	6,782	6,764	5,147
5163	--	Level 3 ENT Procedures	--	--	--	--	8,662	7,701
5183	--	Level 3 Vascular Procedures	--	--	--	--	233,128	200,312
5184	--	Level 4 Vascular Procedures	--	--	--	--	82,379	70,485
5244	--	Level 4 Blood Product Exchange and Related Services	--	--	--	--	42	78

SOURCE: 100% CCW Part B Institutional Revenue Center claim line data file, 2015 – 2020. Provider state data used in the state-level summaries comes from the Medicare Provider of Services (POS) file, 2015 – 2020.

NOTE: The primary HCPCS code of a comprehensive APC is the service on which the APC payment rate is based. This table counts the number of primary HCPCS services associated with each APC.

[1] This column reports the previous APC codes used by CMS before the APC groups were renumbered in CY2016.

Appendix Table 2. Suppression Rates by Dataset Summary Levels and Metrics

Year	Level of Aggregation	APC		File Records		CAPC Services		Medicare Allowed Amount		HCPCS		Provider	
		Reported Count	Suppress Rate	Reported Count	Suppress Rate	Reported Count	Suppress Rate	Reported Count	Suppress Rate	Reported Count	Suppress Rate	Reported Count	Suppress Rate
2020	National-APC	65	3.0%	65	3.0%	5,254,483	0.0%	22,806	0.0%	--	--	--	--
2020	National-APC/HCPCS	65	3.0%	2,487	21.8%	5,251,466	0.1%	22,791	0.1%	2,939	0.1%	--	--
2020	State-APC	65	3.0%	3,003	6.1%	5,253,060	0.0%	22,796	0.0%	--	--	--	--
2020	State-APC/HCPCS	64	4.5%	28,890	65.5%	5,078,398	3.3%	22,053	3.3%	2,658	9.6%		
2020	Provider-APC	64	4.5%	62,720	46.3%	5,040,108	4.1%	21,328	6.5%	--	--	3,180	4.7%
2019	National-APC	64	0.0%	64	0.0%	6,303,208	0.0%	24,501	0.0%	--	--	--	--
2019	National-APC/HCPCS	63	1.6%	2,494	20.0%	6,300,377	0.0%	24,488	0.1%	2,891	0.1%	--	--
2019	State-APC	64	0.0%	2,904	5.7%	6,301,855	0.0%	24,490	0.0%	--	--	--	--
2019	State-APC/HCPCS	63	1.6%	31,162	63.9%	6,124,033	2.8%	23,802	2.8%	2,646	8.5%	--	--
2019	Provider-APC	63	1.6%	65,288	43.5%	6,100,368	3.2%	23,138	5.6%	--	--	3,132	3.5%
2018	National-APC	60	3.2%	60	3.2%	5,991,948	0.0%	23,070	0.0%	--	--	--	--
2018	National-APC/HCPCS	60	3.2%	2,367	20.2%	5,989,343	0.0%	23,060	0.1%	2,755	0.1%	--	--
2018	State-APC	60	3.2%	2,755	6.3%	5,990,641	0.0%	23,060	0.0%	--	--	--	--
2018	State-APC/HCPCS	59	4.8%	29,411	64.1%	5,820,590	2.9%	22,405	2.9%	2,470	10.4%	--	--
2018	Provider-APC	58	6.5%	62,070	43.8%	5,794,950	3.3%	21,719	5.9%	--	--	3,177	3.1%
2017	National-APC	60	3.2%	60	3.2%	5,919,102	0.0%	21,063	0.0%	--	--	--	--
2017	National-APC/HCPCS	60	3.2%	2,310	20.8%	5,915,445	0.1%	21,031	0.2%	2,740	0.1%	--	--
2017	State-APC	60	3.2%	2,753	6.0%	5,917,908	0.0%	21,054	0.0%	--	--	--	--
2017	State-APC/HCPCS	59	4.8%	28,643	64.3%	5,750,730	2.8%	20,451	2.9%	2,487	9.3%	--	--
2017	Provider-APC	58	6.5%	61,779	44.1%	5,719,660	3.4%	19,781	6.1%	--	--	3,198	3.6%
2016	National-APC	35	0.0%	35	0.0%	2,932,894	0.0%	14,372	0.0%	--	--	--	--
2016	National-APC/HCPCS	35	0.0%	716	25.4%	2,931,835	0.0%	14,365	0.1%	923	0.0%	--	--

Year	Level of Aggregation	APC		File Records		CAPC Services		Medicare Allowed Amount		HCPCS		Provider	
		Reported Count	Suppress Rate	Reported Count	Suppress Rate	Reported Count	Suppress Rate	Reported Count	Suppress Rate	Reported Count	Suppress Rate	Reported Count	Suppress Rate
2016	State-APC	34	2.9%	1,548	7.5%	2,932,001	0.0%	14,365	0.0%	--	--	--	--
2016	State-APC/HCPCS	33	5.7%	10,043	60.1%	2,883,639	1.7%	14,065	2.1%	687	25.6%	--	--
2016	Provider-APC	33	5.7%	27,913	49.2%	2,826,757	3.6%	13,365	7.0%	--	--	3,161	3.5%
2015	National-APC	25	0.0%	25	0.0%	741,552	0.0%	7,955	0.0%	--	--	--	--
2015	National-APC/HCPCS	25	0.0%	218	9.9%	741,156	0.1%	7,952	0.0%	212	0.0%	--	--
2015	State-APC	25	0.0%	1,090	7.7%	741,098	0.1%	7,950	0.1%	--	--	--	--
2015	State-APC/HCPCS	25	0.0%	4,461	47.2%	726,626	2.0%	7,813	1.8%	212	0.0%	--	--
2015	Provider-APC	25	0.0%	13,636	59.1%	666,060	10.2%	7,109	10.6%	--	--	2,193	26.8%

SOURCE: 100% CCW Part B Institutional Revenue Center claim line data file, 2015 – 2020. Provider state data used in the state-level summaries comes from the Medicare Provider of Services (POS) file, 2015 – 2020.

NOTE: The table displays the total distinct count reported in the PUFs for each metric as well as the percent of the total distinct count that is suppressed due to the CMS suppression policies that redact any summary value that is based on 10 or fewer services to protect beneficiaries' privacy. For example, the 2015 Provider-APC level file includes 13,636 Provider-APC combinations and this number reflects a suppression rate of 59.1% of all the provider-APC combinations that exist in the data. However, the provider-APC data that is suppressed represent only 10.2% of all C-APC primary services and 10.6% of the total Medicare allowed amount billed for all comprehensive APCs in 2015.