Chronic Condition Subject Matter Expert Panel and BETOS Restructuring
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RBCS

Restructured BETOS Classification System (RBCS) 2021 Annual Update

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EXECUTIVE SUMMARY

The rapid evolution of medical services and technology has led to changes in Medicare spending and, in turn, has created challenges to understanding Medicare expenditures. Since the 1980s, the Centers for Medicare & Medicaid Services (CMS), policymakers, and researchers have relied on the Berenson-Eggers Type of Service[1] (BETOS) taxonomy to understand shifts in Medicare Part B spending over time. However, since BETOS was originally developed, new avenues of utilization have materialized and the landscape of provided services has expanded, requiring the BETOS system to be refreshed. The ideal update would capture all expenditures within a meaningful framework and would facilitate the detection of fluctuations in spending and utilization over time.

Later revisions to the BETOS taxonomy addressed some of these concerns, but further work was needed to incorporate: (a) broader Subject Matter Expert (SME) perspectives; and (b) all Medicare Part B services – not just those paid under the Medicare Physician Fee Schedule (PFS). These revisions updated the taxonomy and re-categorized services as needed. However, they focused on PFS expenditures and left many American Medical Association (AMA) Current Procedural Terminology (CPT Level One)[2] and Healthcare Common Procedure Coding System (HCPCS Level Two)[3] codes uncategorized. This created an incomplete view of Part B spending, necessitating an additional revision.

In September 2019, Provider Resources, Inc. (***PRI***™) and the CMS Office of Enterprise and Data Analytics (OEDA) launched this project to restructure and maintain the BETOS classification system. The objective was twofold: The first objective was to revise the BETOS classification system for healthcare services and supplies to facilitate meaningful analysis of

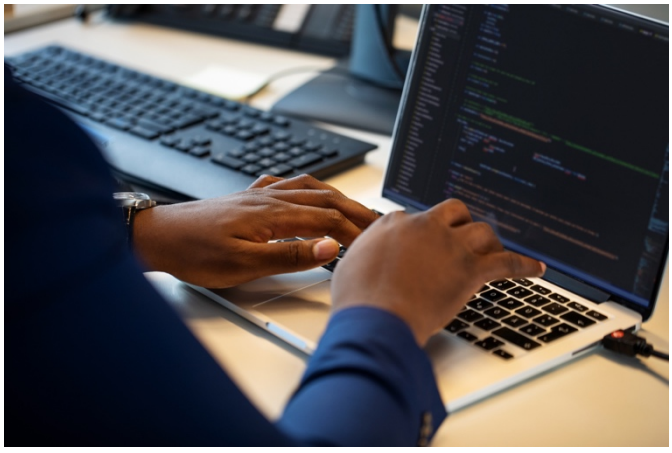
[1] Robert A. Berenson, MD, Mary Jo Braid-Forbes, MPH (May 2019). Updating BETOS 2.0 for 2018 and 2019. Report for the Medicare Payment Advisory Commission. https://www.urban.org/research/publication/development-and-structure-betos-20-illustrative-data.

[2] CPT® codes, descriptions, and other data are copyright 1966, 1970, 1973, 1977, 1981, 1983-2017. American Medical Association. All rights reserved. CPT is a registered trademark of the American Medical Association.

[3] For the purpose of this report, the term "HCPCS" is used to refer to both CPT and HCPCS codes.

healthcare spending and utilization. Specifically, the project sought to categorize HCPCS codes across all Medicare Part B services (not only PFS services) and reduce the number of uncategorized HCPCS codes. The second objective was to maintain and update the taxonomy over time.

This work culminated in the creation of the Restructured BETOS Classification System (RBCS). RBCS development required an extensive review of the previous efforts to update BETOS and necessitated the exploration of innovative approaches to account for most Medicare Part B expenditures. The RBCS includes CPT Level One and HCPCS Level Two codes. This includes HCPCS codes for professional services, durable medical equipment (DME), drugs, and clinical lab tests. Each step of the RBCS development process was reviewed and approved by a Technical Expert Panel (TEP) comprised of experts with diverse backgrounds, including, but not limited to: social science researchers, practicing physicians, physicians in academic institutions, and staff from other federal agencies (such as CMS, the Centers for Disease Control and Prevention, and the Assistant Secretary for Planning and Evaluation).



Each year, the RBCS taxonomy is updated to account for retired HCPCS codes, newly introduced HCPCS codes, and changes in utilization that could impact how HCPCS and CPT codes are categorized in the RBCS taxonomy. The update effort also includes a thorough review of the process used to build the RBCS to ensure that it remains accurate and stable. As part of the review process, additional areas of interest and potential complicating factors are explored. All taxonomy updates and process modifications are reviewed by the TEP to ensure that the RBCS remains logically sound and aligned with the needs of the research community. The TEP met on April 21, 2021, to discuss the development of the 2021 RBCS taxonomy.

In 2020, the first year of RBCS development, the RBCS process evaluated claims billed between January 1, 2014, and December 31, 2018. The final 2020 taxonomy captured 13,414 distinct HCPCS codes paid through Medicare Part B and accounted for over $1.109 trillion in allowed spending.

In 2021, the RBCS development process evaluated claims billed between January 1, 2015, and December 31, 2019. The final 2021 taxonomy captured 13,648 distinct HCPCS codes paid through Medicare Part B and accounted for over $1.154 trillion in allowed spending. Of the HCPCS codes classified in 2021, 599 were new to the taxonomy, and 365 codes were evaluated during 2020 taxonomy construction and were not included in the 2021 taxonomy construction process. The 2021 RBCS taxonomy also contained two HCPCS codes that became active in 2020, which is outside of the 2015-2019 data window. These HCPCS codes

did have some spending during the evaluation timeframe and were retained in the 2021 dataset. Such HCPCS codes will be excluded from the update processes in future revisions.

The final 2021 taxonomy file represents a timeline of RBCS assignments. The taxonomy preserves all RBCS assignments for HCPCS codes from the:

- 2020 taxonomy that were not included in the 2021 taxonomy construction process, and
- 2020 taxonomy that were revised during the 2021 taxonomy construction process.

The final 2021 taxonomy file consists of 14,314 total rows which is broken down as follows:

13,648	Distinct HCPCS active codes at the end of the year
365	Distinct HCPCS codes retired at the end of the previous year (2020)
301	Distinct HCPCS codes are duplicates with different RBCS values because they moved to a different RBCS family
14,314	**Total Rows**

As detailed in Table 1, all assignments in the RBCS taxonomy file that are active for 2021 have an end date of 12/31/9999. The retired RBCS assignments from the 2020 RBCS taxonomy file have an end date of 12/31/2020. All assignments that are new to the 2021 RBCS taxonomy have an effective date of 1/1/2021.

Table 1: RBCS Assignment Dates

Assignment Description	RBCS Assignment Effective Date	RBCS Assignment End Date
Assignments that are active for the 2021 RBCS taxonomy	Any	12/31/9999
Assignments that are retired from the 2020 RBCS taxonomy	Any	12/31/2020
Assignments that are new to the 2021 RBCS taxonomy	1/1/2021	12/31/9999

The advantage of having the taxonomy in this timeline format is that it maintains the history of the taxonomy in a single file, and it allows users to easily see what previous versions of the taxonomy looked like. This will help users understand the gradual evolution of the taxonomy as HCPCS codes are added and assignments are updated. Another advantage of the format is that it will aid in the replication of results when the taxonomy is used at different points in time. Maintaining the RBCS history in this way will become increasingly important as the RBCS evolves over time.

This final report details the processes undertaken to update the 2021 RBCS taxonomy. Included in the report and appendices are significant details on the development of categories, subcategories, families, and major procedure designation. The final taxonomy and HCPCS code crosswalk are also included.

REINTRODUCING THE RBCS TAXONOMY

Introduction

The RBCS design work began with the understanding that it was an evolution of the BETOS framework, and that it would need to fill the same niche that the original BETOS occupied. Throughout the RBCS development process, careful consideration was given to how the classification system will be used, understood, and maintained over time. The design of the taxonomy, the decision rules, and the classification methodology were structured with these guiding operational principles in mind.

RBCS Taxonomy Overview

Like the BETOS classification system that preceded it, the RBCS taxonomy is hierarchically structured with several levels of granularity, allowing researchers to easily select the level(s) of analysis of interest. The various groupings within each level of the hierarchy (categories, subcategories, and families) are carefully crafted to ensure that they are clinically meaningful and informative. The RBCS only categorizes HCPCS codes with an allowed amount greater than zero that are paid through Medicare Part B funds, excluding HCPCS codes that are only paid through Medicaid or commercial payers.

The RBCS hierarchy has RBCS code **categories** at the highest level, followed by RBCS code **subcategories**, followed by RBCS code **families**. Each lower level of the taxonomy is fixed and nested within the higher-level grouping, which means that a subcategory cannot include HCPCS codes from different categories, and families cannot include HCPCS codes from different subcategories. This structure is designed to allow various levels of granularity for researchers interested in Medicare spending and utilization.

In addition, HCPCS codes in the *procedures* category are further subdivided into major procedures and other procedures. Any HCPCS code in the *procedures* category can be designated as a major procedure regardless of its subcategory or family. This feature of the RBCS taxonomy was also carried over from the original BETOS, and it allows researchers to focus on procedures that require more work or are more likely to be performed in inpatient settings.

Like the original BETOS and BETOS 2.0, the RBCS taxonomy is condensed into a single RBCS code. This RBCS code is six characters in length with each character or group of characters

conveying important information about the code's place in the RBCS taxonomy. The RBCS category is identified by the first character, the subcategory is identified by the combined first and second characters, the family is identified by the third, fourth, and fifth characters, and the major procedure designation is identified by the sixth character. Imbedding intelligence into the RBCS code in this way helps data users easily determine a given code's general place in the RBCS taxonomy.

Well-defined RBCS classification rules help to guide the process of assigning a RBCS code to a place in the taxonomy, as well as to provide guidance to data users by being clear, easily understood, and clinically relevant. RBCS rules are future facing, ensuring that the taxonomy is responsive to technological innovation and changes in practice patterns. The rules for each level of the taxonomy are described in the following sections.

Data

Each year, the RBCS process is updated utilizing the most recently compiled five years of Medicare Part B claims data. The RBCS only categorizes HCPCS codes with an allowed amount greater than zero that are paid through Medicare Part B funds, excluding HCPCS codes that are only paid through Medicaid or commercial payers. The 2021 development of the RBCS taxonomy used Virtual Research Data Center (VRDC) data from the Medicare carrier, DME, home health, and outpatient claims files for the years 2015 – 2019.

It is important to note that allowed amounts are used for all spending assessments throughout the RBCS update process. Allowed amounts represent the total liability owed to the provider for the rendered service, including Medicare liability, patient deductibles, and patient co-pays. The allowed amount provides a more accurate representation of the true cost of a given service than the Medicare paid amount alone. This is because it combines all liabilities owed to the provider for a given service, not just what was paid by one party. Allowed amounts were used whenever they were available in the data. When they were not available, an allowed amount equivalent was calculated by combining the Medicare paid amount with the patient responsibility amount.

For every RBCS update, the five years of data are combined and analyzed as a single unit. This broad timeframe smooths out variation in spending and utilization and increases data stability. This is important because spending and utilization are used during the family creation and the major procedure identification process (both of which are covered in more detail below). By using a large, multi-year dataset, the taxonomy naturally adjusts to changing trends and practice patterns over time, but does so slowly, giving the RBCS taxonomy the stability needed to be a useful research tool.

Categories

Categories are the highest level of the taxonomy and represent broad concepts, such as *procedures*, *tests*, and *imaging*, and they are identified as the first character of the RBCS code. These groupings give shape to the overall structure of the taxonomy and help guide subsequent

code assignments. Table 2 lists the specific categories and rules used to assign RBCS codes to categories.

Table 2: Category Decision Rules

Category	Rule
Anesthesia	• All anesthesia HCPCS codes were placed in the anesthesia category.
DME	• HCPCS codes for products and supplies were classified as DME.
Evaluation and Management (E&M)	• All HCPCS codes identified as evaluation and management visits were classified as E&M. • HCPCS Codes for physical examinations to obtain specimens for subsequent testing were assigned to the E&M category.
Imaging	• If the primary purpose of a HCPCS code is to obtain an image, it was classified as imaging in the RBCS taxonomy. • For situations in which a HCPCS code appeared to combine imaging and a procedure, if the primary purpose is to produce an image for interpretation, the HCPCS code was assigned to imaging.
Other	• HCPCS codes for ambulance, enteral and parenteral feeding and nutrition services and supplies, and vision, hearing, and speech services were classified as other.
Procedures	• If the primary purpose of a HCPCS code is to perform a procedure at a single time and place, it was classified as a procedure. • For situations in which a HCPCS code appeared to combine imaging and a procedure, if the primary purpose is to produce an image to facilitate a procedure, the HCPCS code was classified as a procedure. • HCPCS codes for obtaining biopsy or measurement information were assigned to the procedures category.
Treatments	• If the medical intervention described by a HCPCS code is intended to be delivered repeatedly as part of a series over time, it was classified as a treatment. • HCPCS codes that link an E&M process with a treatment modality were classified as treatments.
Tests	• If the purpose of the procedure is to obtain test results, the HCPCS code was classified as a test.

Subcategories

Subcategories are the mid-level of the taxonomy, further subdividing the categories into more specific service groups or organ systems, and they are identified by the combined first and second characters of the RBCS code. For example, the *procedures* category contains subcategories that are specific to organ systems, such as *breast*, *cardiovascular*, or *skin*. The *tests* category contains subcategories that are specific to test type, such as *anatomic pathology* and *pulmonary function*. The full list of RBCS subcategories is presented in Table 3.

Table 3: RBCS Subcategories by Category Group

E&M	Procedures	Treatments
Behavioral health services Care management/coordination Critical care services Emergency department services Home services Hospice Hospital inpatient services E&M – Miscellaneous Nursing facility services Observation care services Office/outpatient services Ophthalmological services	**Breast** **Cardiovascular** **Digestive/ gastrointestinal** **Eye** **Hematology** **Musculoskeletal** **Other organ systems** **Skin** **Vascular**	Chemotherapy Dialysis Injections & infusions (non-oncologic) Treatment – Miscellaneous Physical, occupational, & speech therapy Radiation oncology Spinal manipulation
Imaging	**Tests**	**DME**
CT scan **Imaging – Miscellaneous** **MR** **Nuclear** **Standard X-ray** **Ultrasound**	Anatomic pathology Cardiography General laboratory Test – Miscellaneous Molecular testing Neurologic Pulmonary function	**Drugs administered through DME** **Hospital beds** **Medical/surgical supplies** **Orthotic devices** **Other DME** **Oxygen & supplies** **Wheelchairs**
Other	**Anesthesia**	
Ambulance Enteral & parenteral Vision, hearing & speech services	**Anesthesia**	

Like categories, well-structured rules are used to determine how HCPCS codes should be classified into the various subcategories. These rules are outlined in Table 4.

Table 4: Subcategory Decision Rules

Category	Subcategory Assignment Rules
E&M	• Subcategory distinctions remain based primarily on place of service. • Most E&M (care management/coordination) spending is in "visits," with substantial variation by place of service. • Certain E&M activities specific to a clinical domain (e.g., ophthalmology and behavioral health) are retained. • Recent policy interest in new E&M activities that do not require in-person patient encounters and are recognized for PFS payments gave rise to a subcategory for care coordination/management activities. As such HCPCS codes increase in number, they may need to be grouped into additional subcategories and families in the future.
Procedures & Treatments	• Neither technical modality (e.g., endoscopy) nor service location (e.g., office or ambulatory surgical center) were deemed clinically important distinctions for creating subcategories. Rather, organ system remains the sole basis for procedure subcategories, and type of treatment remains the basis for treatment subcategories. • Blood products and preparation for transfusion (including laboratory HCPCS service codes) are categorized to Procedure-Hematology. • Drugs administered orally are categorized as Treatment-Miscellaneous. Some medications associated with chemotherapy, but also used for other treatment, are categorized as Treatment-Miscellaneous rather than Treatment-Chemotherapy. • Administration of preventive vaccines covered by Medicare are categorized to Treatment-Injection for influenza, pneumococcal, and Hepatitis B vaccines. • Component services for dialysis and supplies are grouped as Treatment-Dialysis.
Imaging	• The original BETOS imaging subcategories continue to effectively present the different imaging modalities.
Tests	• HCPCS codes for travel allowance and collection of specimens are categorized as Test-Laboratory, such as collection of venous blood by venipuncture. Venipunctures and arterial punctures for withdrawal of blood for diagnosis are categorized as procedures.
Anesthesia	• Spending was not analyzed inside this broad category, and no subcategory or family designations were created.

Category	Subcategory Assignment Rules
DME	• Medical-Surgical Supplies is assigned to items that get thrown away after use or that are not used with equipment. • Other DME is assigned to reusable medical equipment that can withstand repeated use. • Drug and supply dispensing fees paid to a pharmacy are categorized as Other DME. • Orthotic Devices includes HCPCS codes for prosthetics.
Other	• The Other-Enteral & Parenteral category includes items such as formula, tubes, supply kits, and all services and supplies related to enteral and parenteral nutrition.

Families

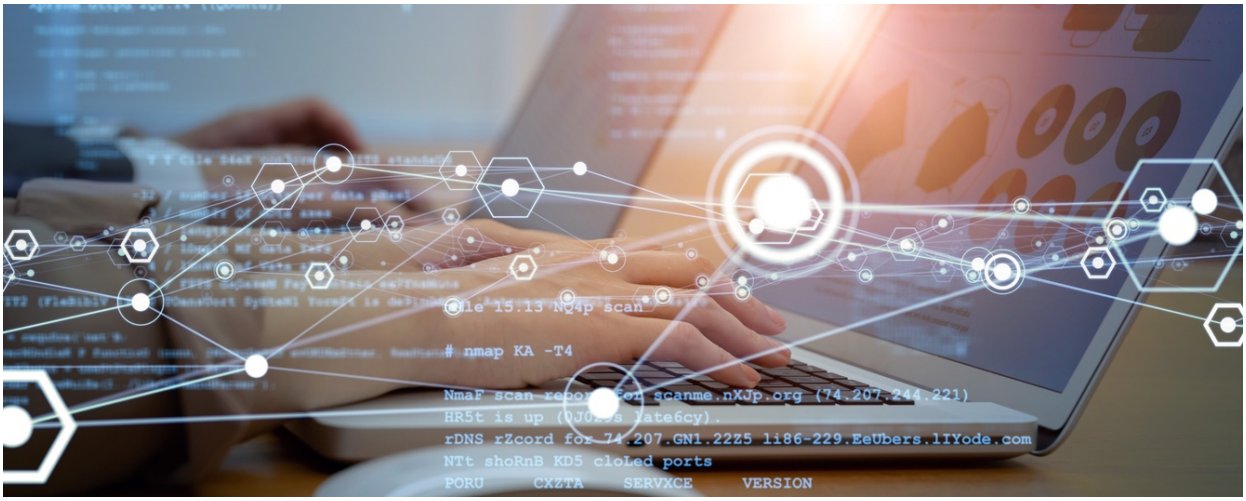
Families represent the lowest level of the hierarchy and subdivide the subcategories into groups of HCPCS codes based on the similarity of the procedural approach. For example, the *digestive/gastrointestinal* subcategory of the *procedures* category contains families such as *cholecystectomy – laparoscopic* and *upper GI endoscopy*. The *anatomic pathology* subcategory of the *tests* category contains families such as *immunohistochemistry* and *surgical pathology examination*. Clinical and coding experts, as well as AMA CPT section and subsection headings, are the primary means by which similar HCPCS codes are grouped. The 2021 RBCS taxonomy includes 158 named families, listed in Appendix A: RBCS Families.

It is important to note that while all HCPCS codes in the RBCS taxonomy are given a category and subcategory, not all HCPCS codes are assigned to a family. The RBCS code family development process begins by identifying the highest spending among non-anesthesia HCPCS codes that when combined account for 90% of total allowed spending in the claims data being reviewed for the current year. These high-spend HCPCS codes (referred to as "start codes" below) are used as starting points to build RBCS code families.

Once the start codes have been identified, the data are searched for other HCPCS codes that are clinically similar to one or more start HCPCS codes. If these clinically similar HCPCS codes (including the start code) meet the spending threshold of at least 0.1% of allowed spending in the claims data being reviewed, then a formal family is created to capture these codes. HCPCS codes that cannot be grouped in this way are not assigned to a formal RBCS family.

The use of spending and utilization patterns in the family development process helps ensure that the RBCS taxonomy is consistent with changing practice trends. As practice patterns change or new CPT and HCPCS codes are introduced, spending will increase for groups of procedures with higher utilization and will decrease for groups with lower utilization. In this way, new families will be introduced and old families will be retired. This process has the dual benefit of keeping the RBCS taxonomy up to date with new technologies and trends, while also pruning families that experience decreased utilization.

In addition to these rules, new rules were implemented in the 2021 RBCS update to further enhance the stability of the taxonomy. First, a five-year retention period was introduced for named families, which means that a named family will only be dropped if it fails to meet the spending threshold for five consecutive years. Second, when HCPCS procedure codes are retired and replaced by new HCPCS procedure codes, and the new HCPCS codes are different enough from the original HCPCS codes to warrant the creation of a new family, the combined spending of both the new and original HCPCS codes will be used to determine if a new family should be created. The justification for both changes are discussed in greater detail in the "Changes Made for the Current Year" section of this report.



The family classification is the third, fourth, and fifth characters of the RBCS code value. For each category, families were assigned a numeric value beginning with "001" in order of highest spending to lowest spending, with "001" assigned to the family with the highest spending. Numbers were assigned in this way because the families with the highest spending are likely to be the most stable over time. HCPCS codes that were not assigned to a family are always given the value of "000."

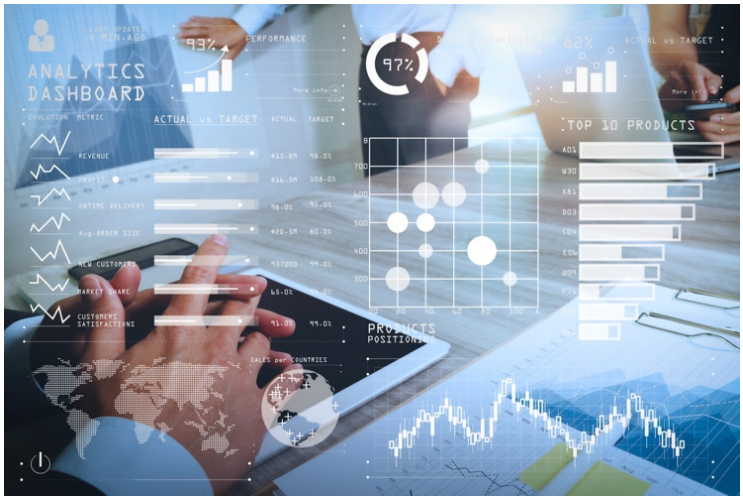
Major Procedure Identification

In the last step of the RBCS update process, all HCPCS codes in the *procedures* category are evaluated to determine if they are major or non-major procedures. Unlike other levels of the RBCS taxonomy, the major procedure designation is not hierarchical in nature. All HCPCS codes in the *procedures* category can be classified as major procedures, regardless of subcategory. The major procedure identification process uses relative value units (RVUs) and service setting to differentiate procedure type. A HCPCS code can be classified as a major procedure in four ways:

- If a HCPCS code is assigned an RVU greater than or equal to 9.0, it is identified as a major procedure.
- A HCPCS code is identified as a major procedure if it is assigned an RVU greater than or equal to 5.5 but less than 9.0, and if it is used in an inpatient setting greater than 15% of the time.
- If the HCPCS code description begins with "unlisted" and occurs in an inpatient setting with a frequency greater than 15%, the HCPCS code is classified as a major procedure. The RVU requirement is not included for unlisted HCPCS codes because RVUs are not assigned to these codes.
- Add-on HCPCS codes represent procedures where the bulk of the effort is concentrated in the primary HCPCS code. For this reason, add-on HCPCS codes are generally not classified as major procedures using RVU rules, even if they occurred within the context of a major procedure. To account for this, if all primary HCPCS codes for a given add-on HCPCS code are major procedures, the add-on HCPCS code is also considered a major procedure. This rule is not applied in situations in which primary HCPCS codes for the add-on HCPCS code are a mix of major and non-major procedures.

RVU releases for 2016, 2017, 2018, 2019, and 2020 were obtained from the CMS PFS Relative Value Files website.[4] The most recent non-missing RVU was retained for situations in which a HCPCS code was assigned different RVUs across years.

In addition to these rules, a three-year retention was implemented in 2021 to enhance the stability of the major procedure identification indicator. HCPCS codes identified as major procedures in one year will continue to be classified as major procedures unless they fail to meet the major procedure benchmarks for three consecutive years. The justification for this change is discussed in greater detail in the "Changes Made for the Current Year" section of this report.



The major procedure designation is added as the sixth character of the RBCS code value. Major procedures are assigned an "M," and non-major procedures are assigned an "O" (other). An "N" (not a procedure) is assigned to all non-procedure HCPCS codes.

[4] https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/PFS-Relative-Value-Files

CHANGES MADE FOR THE CURRENT YEAR

The RBCS development team introduced several enhancements impacting RBCS assignment to the RBCS process in 2021. Each of these modifications are discussed in detail below. The TEP reviewed and approved all modifications to the RBCS process.

Family Retention Period

In the original RBCS taxonomy design, a family consists of a group of functionally related HCPCS codes that account for greater than or equal to 0.1% of non-anesthesia related allowed spending for the entire five-year evaluation period. The benefits of this design are that it helps capture emerging healthcare trends, and it helps prune the taxonomy as certain procedures become less common over time. The risk of this design is that the taxonomy might become unstable. As spending fluctuates from year to year, families that are close to the threshold may be dropped and added repeatedly over time. This instability would introduce confusion and make the taxonomy difficult to use.

To resolve this potential problem, a five-year retention period for families that met the spending threshold in the past but that do not meet the threshold in the claims data being reviewed in the current year was implemented. Families will only be dropped if they fail to meet the spending threshold for five consecutive years. If a family enters the retention period one year, and then exceeds the threshold the next year, the five-year retention period will restart. A five-year timeframe was chosen because it reflects the number of years being evaluated in the current dataset, and the TEP determined that the benefits of greater stability at the family level outweighed the need to keep the RBCS current with changing trends over a five-year timespan.

Five families were identified that did not meet the spending threshold for the 2021 RBCS (see Table 5). These five families were retained for the current year and will be monitored over the next five years. If, after five years, they still do not meet the threshold, these families will be officially retired.

Table 5: Families That Failed to Meet the Spending Threshold for the 2021 RBCS

Category	Subcategory	Family	% of Total Allowed
DME	Other DME	Blood Glucose Test or Reagent Strips	0.09%
DME	Other DME	Vasodilator	0.09%
Imaging	Standard X-ray	X-ray – Upper Extremity	0.09%
Other	Enteral & Parenteral	Enteral Feeding & Formula	0.09%
Procedures	Vascular	Transvascular Stent	0.08%

Updating Families When HCPCS Codes Are Retired

When HCPCS codes are retired and replaced by new HCPCS codes, the new HCPCS codes may be different enough from the retired HCPCS codes to prevent them from being grouped into the same family. An example of this happened in 2016, where all HCPCS codes in the *Transluminal Angioplasty – Venous* family were retired and replaced by new HCPCS codes that belonged in the *A-V Fistula PCI* family. These HCPCS codes are presented in Table 6 and Table 7. Although in this instance the replacement HCPCS codes captured enough spending in the data to create a new family, this will most likely not be the case for most newly introduced HCPCS codes. Rather, it is more likely that spending for new HCPCS codes will not exceed the family creation threshold until they have been in the data for several years.

Table 6: Transluminal Angioplasty – Venous Codes

HCPCS Code	HCPCS Code Description
35460	Transluminal balloon angioplasty, open; venous
35476	Transluminal balloon angioplasty, percutaneous; venous
36870	Thrombectomy, percutaneous, arteriovenous fistula, autogenous or nonautogenous graft (includes mechanical thrombus extraction and intra-graft thrombolysis)
75978	Transluminal balloon angioplasty, venous (e.g., subclavian stenosis), radiological supervision and interpretation

Table 7: A-V Fistula PCI

HCPCS Code	HCPCS Code Description
36902	Insertion of needle and/or catheter into dialysis circuit and balloon dilation of dialysis segment, with imaging including radiological supervision and interpretation
36903	Insertion of needle and/or catheter into dialysis circuit and insertion of stent in dialysis segment, with imaging including radiological supervision and interpretation
36904	Excision of blood clot and/or infusion to dissolve blood clot in dialysis circuit and balloon dilation of dialysis segment, accessed through the skin, with imaging including radiological supervision and interpretation
36905	Excision of blood clot and/or infusion to dissolve blood clot in dialysis circuit and balloon dilation of dialysis segment, accessed through the skin, with imaging including radiological supervision and interpretation
36906	Excision of blood clot and/or infusion to dissolve blood clot and balloon dilation of dialysis segment, accessed through the skin, with imaging including radiological supervision and interpretation
36907	Balloon dilation of dialysis segment, accessed through the skin, with imaging including radiological supervision and interpretation
36908	Insertion of stent in dialysis segment, with imaging including radiological supervision and interpretation

HCPCS Code	HCPCS Code Description
36909	Permanent blockage of dialysis circuit, with imaging including radiological supervision and interpretation

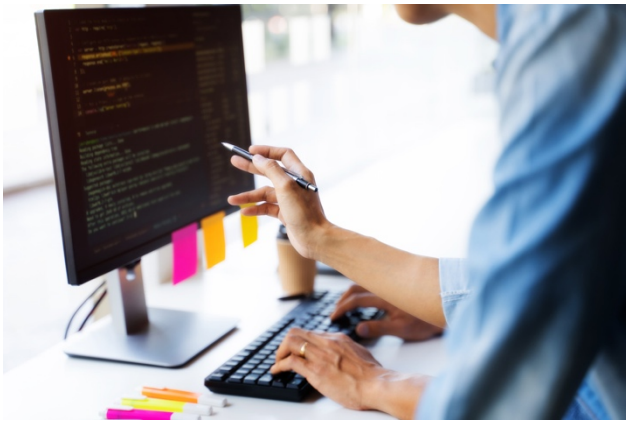
To avoid a potential gap as replacement HCPCS codes accumulate the spending needed to create a new family, a review step to the RBCS update process was added to identify retired and replacement HCPCS codes and to automatically create new families if needed. If the original HCPCS codes were assigned to a RBCS code family and it is determined that the replacement HCPCS codes are different enough to create a new RBCS family, the new RBCS family will be created automatically. This new RBCS family will then begin the five-year retention period and will potentially be dropped if sufficient spending is not accumulated over the next five years.

For retired HCPCS codes that are not part of a named RBCS family, the spending will be added for the retired HCPCS codes to the spending for the replacement HCPCS codes. This will allow the taxonomy to pick up emerging trends more quickly.

Service Setting for Identifying Major Procedures

Several of the major procedure identification criteria evaluate the percentage of claims where a given HCPCS code is billed in an inpatient setting. The original RBCS process developed in 2020 only looked at professional claims (billed through forms CMS-1500/837p) when determining service setting and excluded facility claims (billed through forms UB-04/8737i). This decision was made because although facility claims use HCPCS codes when reporting outpatient procedures, they almost always use International Classification of Diseases (ICD) codes rather than HCPCS codes when reporting inpatient procedures. As a result, HCPCS codes from facility claims will add to the overall HCPCS code frequency (the denominator) without contributing to the frequency of HCPCS codes billed in an inpatient setting (the numerator). This design decision was revisited for the 2021 RBCS, and it was decided to add facility claims to the inpatient frequency counts.

Most major procedures were identified using RVUs alone, without considering service location. 2,681 HCPCS codes were classified as major procedure HCPCS codes in 2021 because they had RVUs that were greater than 9.0, or because they were add-on HCPCS codes where all primary HCPCS codes were identified as major procedures. Adding facility claims did not impact this part of the classification process because service setting was not used to identify major procedures during this step.



A much smaller number of HCPCS codes used service setting to identify major procedures. For HCPCS codes that require service setting, 536 HCPCS codes were classified as major procedures using only professional claims, and 468 HCPCS codes were classified as major procedures using both professional and facility claims. Though using both professional and facility claims resulted in a reduction of 68 major HCPCS procedure codes, the TEP agreed that using both claim types will provide a more accurate representation of how HCPCS codes are being billed.

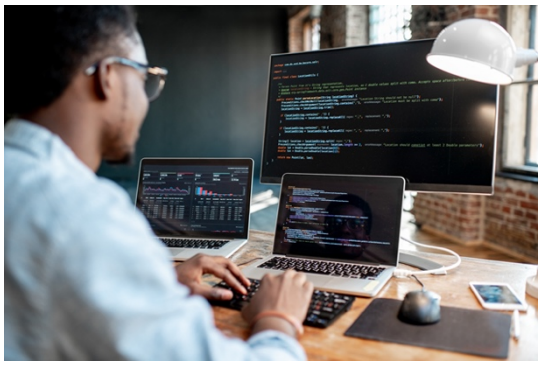
Major Procedure Retention Period

Because the major procedure identification process uses variables that can change from one year to the next (RVU assignments from the PFS and inpatient setting frequency), major procedure classifications face some of the same instability problems as RBCS code families. That is, fluctuations in variables could cause the major procedure designation to be unstable and difficult to use. To enforce stability in the major procedures flag, a three-year retention period was implemented for HCPCS codes identified as major procedures.

Using the three-year retention period, HCPCS codes identified as major procedures in one year will only be classified as non-major procedures if they fail to meet the major procedures benchmarks for three consecutive years. If a major procedure were to enter the retention period one year, and then exceed the thresholds the next year, the three-year retention period would restart. The TEP agreed that a three-year retention period represents a good balance between the stability of the taxonomy and responsiveness to changing trends.

Bundled Services

When services are paid as part of a bundle, reimbursement is not directly linked to all of the specific services that are rendered. A bundle captures multiple services that are expected to be performed as part of a package, with providers being paid a set rate for the entire package instead of being paid for each individual service. Sometimes the actual service cost is less than the bundled payment, and sometimes it is more.



Bundled payments present a challenge for the RBCS methodology for two reasons. First, a given HCPCS code may never have a positive allowed amount if it is only ever paid as part of a bundle, and therefore, it will not be included in the taxonomy. Second, although in some instances the entire payment for a bundled service may be assigned to a HCPCS code that specifically identifies the bundle, there may be other instances in which the payment is assigned to a HCPCS code that is also used for non-bundled payments. In the latter case, the bundle

payment will be higher than what is generally spent on that service, inflating the allowed amount for that service.

The following sections outline the bundled payment methodologies that were reviewed. Each of the bundled payment types were discussed individually before discussing the analyses and results associated with these payment types.

Global Surgical Packages

Medicare established a national definition of a global surgical package (GSP) to ensure that Medicare payments for the same services are consistent across all geographic areas. The GSP includes all of the necessary services normally furnished by a surgeon before, during, and after a procedure. Medicare payment for a surgical procedure, based on a global allowance, includes the pre-operative, intra-operative, and post-operative services routinely performed by the primary surgeon or by members of the same medical practice with the same specialty.

GSP Concerns

- GSP codes can only be used for GSP billing, so there is no concern about inflated allowed amounts for GSP codes.
- GSPs are billed with a single GSP-specific HCPCS code, and services included in the GSP are not reported separately on claims with a zero-dollar payment.
- Although additional services outside of the surgical bundle can be on the same claim as the GSP code, those GSP codes are paid separately and are not included in the bundled cost.
- For the reasons listed above, there is no concern about missing HCPCS codes or inflating spending for GSP claims.

Federally Qualified Health Centers

Federally Qualified Health Centers (FQHCs) are safety net providers that typically provide services in an outpatient clinic. FQHCs are not reimbursed by Medicare through the PFS or through the Outpatient Prospective Payment System (OPPS) like other comparable providers of Medicare Part B services. Rather, Medicare pays FQHCs based on the FQHC Prospective Payment System (PPS) for medically necessary primary health services and qualified preventive health services delivered by an FQHC practitioner. FQHCs are paid 80% of the lesser of their charges based on FQHC-specific HCPCS payment codes or the FQHC PPS rate, and services appear on outpatient Medicare claims.

The bundled FQHC payment corresponds to one of five FQHC-specific HCPCS codes. The same claim will include at least one additional line item with the HCPCS code describing the reason for the visit, with the same line revenue center code as the FQHC bundle code and with a Medicare zero-dollar paid amount. Some additional services that are not part of the FQHC bundle can also be billed on FQHC claims with positive paid amounts. These additional items include drugs, vaccines, and lab tests. An example FQHC claim is provided in Table 8.

Table 8: Example Claim Lines for an FQHC Claim

Claim Line	HCPCS Code	HCPCS Description	Allowed Amount
1	G0467	FQHC visit, established patient	$127.64
2	36416	Puncture of skin for collection of blood sample	$0.00
3	99214	Established patient office or other outpatient, visit typically 25 minutes	$0.00
4	90688	Vaccine for influenza for administration into muscle, 0.5 ml dosage	$0.00
5	90715	Vaccine for tetanus, diphtheria toxoids, and acellular pertussis (whooping cough) for injection into muscle, patient 7 years or older	$0.00

FQHC Concerns

- Services that are performed as part of the FQHC bundle are included on the claim, but they are not assigned a positive Medicare payment amount. Therefore, it is possible that the RBCS methodology misses some covered Medicare Part B services that are part of the FQHC bundle.
- FQHC bundled payments are billed on claim lines with HCPCS codes that are specific to FQHC visits. Although this will result in spending for the FQHC-specific codes, it should not inflate spending for non-FQHC codes.

Rural Health Centers

For Medicare reimbursement, Rural Health Centers (RHCs) do not receive payment through the PFS or through the OPPS like other comparable providers of Medicare Part B services. Instead, CMS pays an interim all-inclusive rate (AIR) payment per visit throughout the clinic's fiscal year, which is then reconciled through cost reporting at the end of the year. RHCs receive an AIR payment for medically necessary, face-to-face primary health services and qualified preventive health services furnished by an RHC practitioner. RHC services appear on outpatient Medicare claims.

An RHC claim is similar in some ways to an FQHC claim, but it does not contain RHC-specific HCPCS codes. Instead, it will contain a line item with the HCPCS code describing the reason for the visit, and the entire Medicare payment for the visit will be on that line. There may be additional lines for services that do not require a co-insurance or deductible, but these services will always have a zero-dollar paid amount. There may also be additional line items on the claim for separately billable services, such as lab services, which will have positive Medicare payments. An example RHC claim is provided in Table 9.

Table 9: Example Claim Lines for an RHC Claim

Claim Line	HCPCS Code	HCPCS Description	Allowed Amount
1	G0439	Annual wellness visit, includes a personalized prevention plan of service (PPS) subsequent visit	$274.01
2	36415	Insertion of needle into vein for collection of blood sample	$0.00

RHC Concerns

- Services that are provided as part of the RHC bundle are included on the claim, but they are not assigned a positive Medicare payment amount. Therefore, it is possible that the RBCS methodology misses some covered Medicare Part B services that are part of the RHC bundle.
- RHC bundled payments are billed on claim lines with HCPCS codes that are not specific to RHC visits. Therefore, RHC payments could inflate the overall Medicare paid amounts for some HCPCS codes.

Ambulatory Payment Classifications

Medicare pays for most hospital outpatient services under the OPPS using Ambulatory Payment Classifications (APCs), through which individual services are classified based on similar clinical characteristics and costs. All services within an APC have the same payment rate. Additionally, within each APC, CMS packages integral, ancillary, supportive, dependent, and adjunctive services and items with the primary service. Under the OPPS, a single payment is also made when two or more related services are provided in the same outpatient visit. Some items and services, such as pass-through devices and drugs, are required by statute to be paid separately under the OPPS. APC payments can apply to outpatient surgery, outpatient clinics, emergency department services, and observation services. APC payments also apply to outpatient testing (such as radiology and nuclear medicine imaging) and therapies (such as certain drugs, intravenous infusion therapies, and blood products).

In the VRDC, claims with APC billing will have the entire APC payment on a claim line with the APC code. A HCPCS code can also be on the claim line with the APC code and payment. All other lines with HCPCS codes paid as part of the APC will have zero-dollar Medicare paid amounts. Non-bundled services can also be billed on claims with APC codes and will have separate Fee-for-Service (FFS) payment amounts. HCPCS codes that are included in the APC bundle can be differentiated from non-bundled services using a line-level revenue center status code indicator.

An example of an APC code is provided in Table 10. The APC code, the entire APC allowed amount, and a HCPCS code are on the same line as the primary service provided. In the

current RBCS methodology, the entire APC payment ($583.73) is assigned to code 32555. All other HCPCS codes have zero-dollar allowed amounts.

Table 10: Example Claim Lines for APC 5181 (Level 1 Vascular Procedures)

Claim Line	APC Code	HCPCS Code	Code Description	Allowed Amount
1	5181	32555	Removal of fluid from chest cavity with imaging guidance	$583.73
2		71045	X-ray of chest, 1 view	$0.00
3		88341	Immunocytochemistry, per specimen; initial single antibody stain procedure	$0.00
4		88341	Immunocytochemistry, per specimen; initial single antibody stain procedure	$0.00
5		88341	Immunocytochemistry, per specimen; initial single antibody stain procedure	$0.00
6		88112	Cell examination of specimen	$0.00
7		88342	Tissue or cell analysis by immunologic technique	$0.00
8		88305	Pathology examination of tissue using a microscope, intermediate complexity	$0.00

APC Concerns

- Many services that are performed as part of the APC bundle are included on the claim, but they are not assigned a positive allowed amount. Therefore, it is possible that the RBCS methodology misses some covered Medicare Part B services.
- APCs include claim lines with HCPCS codes that can be used for non-bundled services. In these instances, APCs could inflate the overall allowed amounts for such codes.

Missing HCPCS Codes

As noted earlier, because positive allowed spending is required for a HCPCS code to be included in the RBCS, the current methodology would miss HCPCS codes that are covered by Medicare Part B but that are always billed as part of a bundle (and therefore always have zero-dollar allowed amounts). To identify these HCPCS codes, HCPCS codes for all APC, FQHC, and RCH claims were extracted and matched to the Medicare PFS, the OPPS, and Medicare DME code lists to identify HCPCS codes that were covered by Medicare but had no positive allowed amounts. Through this process, a total of 293 HCPCS codes were identified that needed to be added to the 2021 RBCS taxonomy. These HCPCS codes were subsequently reviewed and classified for the RBCS taxonomy.

Additionally, a review identified 124 HCPCS codes that were included in the RBCS taxonomy but whose services were not covered by Medicare according to the PFS, the OPPS, and DME covered HCPCS code lists. These HCPCS codes had positive allowed amounts only because they were on a claim line with the bundled claim, not because the services were covered by Medicare. These HCPCS codes were therefore dropped from the taxonomy.

Changes Made to Capture HCPCS Codes Paid as Part of a Bundle

To ensure that HCPCS codes paid as part of a bundle are included in the RBCS taxonomy in subsequent years, the process of capturing HCPCS codes in the claims data was modified. Instead of relying on allowed amounts alone, HCPCS codes will also be compared to the Medicare PFS, OPPS, and DME lists in subsequent years. HCPCS codes that are explicitly covered by Medicare under those lists will be retained in the data even if they do not have positive dollar allowed amounts. HCPCS codes that are explicitly excluded from Medicare payment in the PFS, OPPS, and DME lists will be excluded from the RBCS classification process.

Inflated Spending as a Result of Bundled Payments

GSP and FQHC Claims

Because the entire allowed amount is applied to a single HCPCS code that identifies a bundle, there is no concern about potentially inflating spending for a given HCPCS code in FQHC or GSP claims.

RHC Claims

The analysis of RCH claims indicates that there is allowed amount inflation on some procedure HCPCS codes, although the allowed amounts for these claims are generally low. There were 1,752 HCPCS codes identified on RHC claims where the entire payment was on one claim line. Of these HCPCS codes, 67 had a five-year total allowed amount greater than $1 million, and only 7 had allowed amounts greater than $100 million. On average, the RHC allowed amount accounted for 5% of total allowed spending over the course of the entire five-year timespan.

APC Claims

The analysis of APC claims indicates that there can be significant inflation for HCPCS codes on claim lines with APC payments. For example, when HCPCS code 64581 is paid on non-bundled claims, the average payment per claim line is $2,018. However, when this HCPCS code is on the same line as its APC code, the paid amount for that line varies from $5,139 to $17,025 per claim line (see Table 11).

Table 11: Average Per-Claim Payment for Code 64581 (Incision to Insert Sacral Nerve Neurostimulator Electrodes) on Lines with Different APC Codes

APC Code	APC Code Description	Average Per-Claim Allowed Amount
-	No APC code	$2,018
0061	Level 2 Neurostimulator and Related Procedures	$5,139
0039	Level 3 Breast and Skin Surgery	$16,640
5462	Level 2 Neurostimulator and Related Procedures	$5,580
5463	Level 3 Neurostimulator and Related Procedures	$17,025

A total of 3,120 HCPCS codes were identified as potentially being inflated as a result of APC bundled payments. On average, APC bundles accounted for 35% of allowed spending on APC codes, though most have relatively moderate spending. Only 27 HCPCS codes (0.9%) had greater than $500 million in spending, and 102 HCPCS codes (3.3%) had between $100 million and $500 million in spending. Most HCPCS codes (57.8%; 1,803) had less than $1 million in spending.

The five HCPCS codes with the highest overall allowed amounts are shown in Table 12, along with the percent of allowed amount spending for that HCPCS code that was accounted for by APC bundled payments. As shown, over 90% of total allowed spending for HCPCS codes C9600 and 33249 comes from claims where the payment is on an APC line. In these cases, the overall spending for the HCPCS codes are inflated, which increases the likelihood that a formal RBCS code family will be created for related HCPCS codes.

Table 12: Percent of Allowed Spending Accounted for by APC Payments for Top Five Codes with APC Spending

HCPCS Code	Code Description	APC Allowed ($M)	Total Allowed ($M)	APC % of Total Allowed
66984	Removal of cataract with insertion of lens	$2,230	$15,419	14%
C9600	Percutaneous transcatheter placement of drug eluting intracoronary stent(s), with coronary angioplasty when performed; single major coronary artery or branch	$5,134	$5,148	99%
33249	Insertion or replacement of single or dual chamber pacing defibrillator leads	$4,328	$4,651	93%
27447	Repair of knee joint	$1,749	$4,030	43%
93458	Insertion of catheter in left heart for imaging of blood	$1,810	$3,634	50%

HCPCS Code	Code Description	APC Allowed ($M)	Total Allowed ($M)	APC % of Total Allowed
	vessels or grafts and left lower heart			

Impact of Inflated Spending on the Family Creation Process

To evaluate the impact of inflated spending on the RBCS taxonomy, the RBCS family creation process was re-run after removing spending on RHC and APC bundled payment claims lines. As noted earlier, spending impacts the family creation process in two ways. First, the process begins by identifying the highest spend non-anesthesia HCPCS codes (referred to as start codes) that account for 90% of total allowed spending in the claims data. These high-spend HCPCS codes are used as starting points to build RBCS code families. Second, a formal family is created if a group of HCPCS codes that are clinically similar to a starting HCPCS code account for greater than 0.1% of allowed spending in the claims data. Removing APC and RHC spending from the family creation process could change the number of start HCPCS codes identified, and it could result in a group of HCPCS codes failing to meet the 0.1% family creation threshold.

When the impact of RHC bundled payments was evaluated, no impact on the current version of the RBCS was found. No family start HCPCS codes were lost, and all families were retained after the removal of RHC spending, indicating that RHC bundled payments do not represent a significant problem for the RBCS family creation process. However, monitoring of RHC bundle payments will continue to ensure that they do not impact family creation going forward.

The impact of APC bundled payments on the family creation process was evaluated, and a large impact on some RBCS code families was found. When APC spending was removed, two families (Bronchoscopy and Pacemaker Removal) no longer had a family start RBCS code, which means that these families would not have been created if APC spending was not included in the data. In addition to these families, 13 families failed to meet the 0.1% allowed spending threshold. Table 13 lists all families that would be dropped if APC spending was excluded from the data.

Table 13: Families That Would be Dropped after Removal of APC Spending*

Family Description	% of Allowed Spending Accounted for with APCs	% of Allowed Spending Accounted for without APCs
Bronchoscopy †	0.10%	0.06%
Cholecystectomy – Laparoscopic	0.19%	0.09%
Comprehensive Electrophysiologic Evaluation	0.55%	0.08%
Hernia Repair – Laparoscopic (any site)	0.14%	0.05%
Hernia Repair – Open (Inguinal)	0.10%	0.07%
Insertion/Removal/Replacement ICD	0.77%	0.06%

Family Description	% of Allowed Spending Accounted for with APCs	% of Allowed Spending Accounted for without APCs
Lymph Node Biopsy	0.11%	0.06%
Pacemaker Insertion or Repair	0.29%	0.05%
Pacemaker Removal †	0.19%	0.02%
Percutaneous Vertebroplasty	0.14%	0.08%
Prostate Resection	0.16%	0.07%
Transluminal Angioplasty – Venous	0.12%	0.07%
Transvascular Stent ‡	0.09%	0.03%
Vascular Embolization	0.10%	0.03%
Vitrectomy – Mechanical	0.11%	0.08%

** A group of HCPCS codes must capture at least 0.1% of allowed spending in the dataset to be considered a family*
† These families did not have a start HCPCS code
‡ These families did not meet the threshold even when APC spending was included

Although these families did not meet the family creation spending threshold, they will be kept in the current RBCS taxonomy because of the five-year retention period for all named families. Exploring potential solutions to the APC bundled payment method will be a priority in the upcoming contract year. The most likely solution will be to select HCPCS codes paid under an APC and then divide the allowed amount based on per-line charges. However, the consequences of implementing this solution are not yet known and will require a thorough review.

ADDITIONAL ISSUES REVIEWED IN THE CURRENT YEAR

Alternative Payment Models

An alternative payment model (APM) deviates from traditional FFS by adding incentive payments or restructuring how care is paid to motivate healthcare providers to provide higher-quality and more cost-efficient care. APMs can apply to a specific clinical condition, an episode of care, a medical specialty, a site of care, or a population. Common types of APMs include medical homes, episodic or bundled models, accountable care models, and capitated models. In 2019, 41% of Medicare payments, 30% of commercial payments, 53% of Medicare Advantage payments, and 23% of Medicaid payments were tied to APMs. More than 50 APMs are ongoing under the oversight of CMS' Center for Medicare & Medicaid Innovation (CMMI).

With respect to Medicare Part B services, Medicare's payment incentives under APMs can be billed and paid for prospectively (paid prior to the provision of services) within the traditional PFS or OPPS claims systems, retrospectively (payment is reconciled after the provision of services) within the PFS and OPPS, or via lump sum payments (prospective or retrospective) made outside of the PFS and OPPS. Currently, the majority of Medicare APM payment methodologies fall under retrospective FFS or lump sum payments that occur outside of the traditional Medicare payment systems. However, CMMI is increasingly moving towards prospective payment, particularly for new APMs beginning in 2021 and 2022.

For the RBCS, APMs that impact paid amounts on FFS claims will have a similar effect as APC bundled payments. Though most APMs that are currently active involve retrospective payments and do not impact FFS claims, many of the newer models involve prospective payments that may reduce allowed amount spending shown on FFS claims. Strategies for dealing with these types of payments will need to be developed going forward and will be an area of focus during the next RBCS update year. A summary of Medicare APMs, their payment methodologies, and their potential impact on FFS claims can be found in Appendix B: Overview of Medicare APMs.

Telemedicine

In response to the COVID-19 Public Health Emergency, CMS relaxed several requirements around telemedicine visits. Increased spending for these services has generated interest in potentially creating families that are specific to telemedicine. In response to this interest, claims to identify telemedicine utilization changes from 2019 to 2020 were evaluated.

There are three primary types of virtual services that Medicare covers: virtual check-ins (assessments by telephone or other telecommunication device to determine whether an in-office encounter is needed), e-visits (online E&M visits), and telemedicine visits (real-time audio and video, or more recently, audio-only visits). Virtual check-ins and e-visits are billed using HCPCS codes that are specific to those types of visits, so any large increases in utilization should be captured by the RBCS taxonomy. However, integrating telemedicine visits is not as straightforward. Many services that fall into this category are billed using the standard office or outpatient HCPCS codes, and HCPCS code modifiers or place of service (POS) codes are the only way to identify them as telemedicine. Because HCPCS code modifiers and POS codes are not used in the RBCS determination process, increases in telemedicine visits would not be identified in the RBCS taxonomy if those services are billed using HCPCS codes that are not specific to telemedicine.

To analyze the potential impact of virtual types of visits on the RBCS taxonomy, HCPCS codes, procedure code modifiers, and POS codes identified in the telemedicine toolkit[5] and the 2020 telemedicine service code list were extracted.[6] Then, claims with telemedicine modifiers or telemedicine POS codes as telemedicine services for non-telemedicine-specific claims were

[5] https://www.cms.gov/files/document/general-telemedicine-toolkit.pdf
[6] https://www.ama-assn.org/system/files/2020-05/telehealth-services-covered-by-Medicare-and-included-in-CPT-code-set.pdf

classified. Results for HCPCS codes that are specific for virtual check-ins, e-visits, and telemedicine services are presented in Table 14.

Table 14: Spending (in Millions) on Procedure Codes Specific to Telemedicine

	Allowed Amount ($M)	
Visit Type	**2019**	**2020**
E-Visit	$0.0	$9.6
Virtual Check-In	$0.2	$12.4
Telephone E&M	$0.0	$754.1
Telemedicine Consult	$12.8	$21.9
Telemedicine Medication Management	$0.3	$0.4

Though there was a large increase in spending for telephone E&M visits, accounting for just over $754 million in 2020, no single HCPCS code in the telephone E&M set of HCPCS codes met the threshold to be identified as a family start code. The overall spending for telephone E&M would have to increase by a factor of 40 to meet that threshold (all start codes accounted for at least $148 billion dollars over the five-year timeframe in the current RBCS revision).

Spending for HCPCS codes that are not specifically used for telemedicine billing is presented in Table 15.

Table 15: Spending (in Millions) on Non-Telemedicine-Specific HCPCS Procedures Codes with vs. without Telemedicine Modifiers or POS Codes

	Allowed Amount ($M)	
Procedure Code	**No Telemedicine Mod or POS**	**With Telemedicine Mod or POS**
Private Home E&M		
2019	$584	$0
2020	$491	$61
Office E&M		
2019	$25,030	$19
2020	$18,504	$2,082
Other Approved Services		
2019	$43,377	$15
2020	$35,893	$1,171
Grand Total	**$123,877**	**$3,348**

For the non-telemedicine-specific E&M services, there was a very large increase between 2019 and 2020 in spending for HCPCS codes with telemedicine modifiers or telephone POS codes. However, most of the spending remained on claims without such modifiers or POS codes, and the spending for HCPCS codes with telemedicine modifiers or POS codes did not reach the necessary threshold to create a new telemedicine family.

These results highlight a problem with creating a potential family specific to telemedicine services. Because the RBCS assignment methodology does not take modifiers or POS codes into account, such a family would not capture most telemedicine utilization. This is further complicated by a potential need to differentiate services by the type of service that was delivered, which could cut across categories or subcategories. For example, it is not clear whether a HCPCS code for a telemedicine behavioral health visit would be categorized as telemedicine or as behavioral health. For these reasons, creating an RBCS family specific to telemedicine visits is not recommended at this time, although it will remain a topic of exploration in future RBCS annual updates.

Clinical Classifications Software for Services Comparison

An important way to demonstrate the validity of any code classification methodology is to evaluate the degree to which that code classification system agrees with other classification systems. To support the validity of the RBCS, the Clinical Classifications Software (CCS) for Services and Procedures[7] categories were matched to the RBCS taxonomy. The CCS was developed as part of the Healthcare Cost and Utilization Project, and like the RBCS, the CCS collapses a large number of procedure codes into a discrete number of clinically meaningful groups. Though originally developed for mapping ICD codes, the CCS categories have also been mapped to HCPCS and CPT codes.

To demonstrate convergent validity, the CCS Services and Procedures v2019.2 code mappings were applied to the 2021 RBCS code set. The CCS mappings are granular and are most comparable to the RBCS taxonomy at the family level, so the CCS mappings were compared to the RBCS family classifications. A clinical expert reviewed all matched categories and potential mismatches. The RBCS and CCS classified codes into similar groups in almost all cases. All disagreements were reviewed and updated in the RBCS classification as needed. A total of five RBCS codes were updated based on CCS comparisons. All other codes were in general agreement, strongly supporting the convergent validity of the RBCS taxonomy.

RBCS 2021 UPDATE PROCESS

This section of the report provides details of the process used to update the 2020 RBCS taxonomy based on a more recent five-year set of Medicare claims.

[7] https://www.hcup-us.ahrq.gov/toolssoftware/ccs_svcsproc/ccssvcproc.jsp

RBCS Update Steps

The following steps were performed for the 2021 RBCS update process:

1. Extract HCPCS codes from carrier, DME, home health, and outpatient claims in the VRDC that were submitted between January 1, 2015, and December 31, 2019
2. Retain HCPCS codes with positive allowed spending[8] over the five-year timeframe or HCPCS codes billed as part of a bundled payment
3. Drop HCPCS codes explicitly identified as not covered under the PFS and OPPS
4. Apply the RBCS codes from the previous year to the new file
5. Identify HCPCS codes that were not classified in the previous year
6. Add category and subcategory classifications to any new HCPCS codes
7. Identify newly-added HCPCS codes for families and review HCPCS codes to determine if new families need to be created; review retired and replacement HCPCS codes; identify existing families that do not meet the spending threshold and begin the five-year retention period
8. Identify major and non-major procedures; begin the three-year retention period for HCPCS codes that do not meet the major procedure requirements
9. Apply quality assurance checks
    a. Spot checks
    b. HCPCS Add-on code checks
    c. CCS category comparison
10. Finalize taxonomy for TEP review
11. Conduct TEP review of revised taxonomy
12. Finalize RBCS taxonomy for the current year
13. Submit report to CMS

HCPCS Codes and Captured Spending

Statistics for the current and prior years are shown in Table 16. In 2021, a total of 13,648 distinct HCPCS codes were classified by the RBCS taxonomy. Of these HCPCS codes, 599 were new to the 2021 revision, and 365 were evaluated during 2020 RBCS taxonomy construction and were not included in the 2021 RBCS taxonomy. The 2021 revision also saw an increase of $45 billion in total spending captured. Of this additional spending, nearly $5 billion came from the new HCPCS codes added this year. The 2021 RBCS taxonomy contained two HCPCS codes that became active in 2020, which is outside of the 2015-2019 data window. These HCPCS codes did have some spending during the evaluation timeframe and were retained in the 2021 dataset. Such HCPCS codes will be excluded from the update processes in future revisions.

Table 16: High-Level RBCS Statistics Across Years

[8] For the carrier and DME files, the allowed amount was defined as the allowed charge amount. For all other claims files, allowed amounts were calculated by adding the payment amount and the patient responsibility amount(s). This was done because the other claims tables do not have a field for specifically captured allowed amounts.

	2020	2021
Years Captured	2014-2018	2015-2019
HCPCS Codes Classified	13,414	13,648
Total Allowed Spending Captured	$1,109,244,826,725	$1,154,748,672,025
New HCPCS Codes	N/A	599
HCPCS Codes Not Carried Over	N/A	365
Spending Increase Due to New HCPCS Codes	N/A	$4,991,574,974

The final 2021 taxonomy file represents a timeline of RBCS assignments. The taxonomy preserves all RBCS assignments for HCPCS codes from the:

- 2020 taxonomy that were not included in the 2021 taxonomy construction process, and
- 2020 taxonomy that were revised during the 2021 taxonomy construction process.

The final 2021 taxonomy file consists of 14,314 total rows which is broken down as follows:

13,648	Distinct HCPCS active codes at the end of the year
365	Distinct HCPCS codes retired at the end of the previous year (2020)
301	Distinct HCPCS codes are duplicates with different RBCS values because they moved to a different RBCS family
14,314	**Total Rows**

As detailed in Table 17, all assignments in the RBCS taxonomy file that are active for 2021 have an end date of 12/31/9999. The retired RBCS assignments from the 2020 RBCS taxonomy file have an end date of 12/31/2020. All assignments that are new to the 2021 RBCS taxonomy have an effective date of 1/1/2021.

Table 17: RBCS Assignment Dates

Assignment Description	RBCS Assignment Effective Date	RBCS Assignment End Date
Assignments that are active for the 2021 RBCS taxonomy	Any	12/31/9999
Assignments that are retired from the 2020 RBCS taxonomy	Any	12/31/2020
Assignments that are new to the 2021 RBCS taxonomy	1/1/2021	12/31/9999

The advantage of having the taxonomy in this timeline format is that it maintains the history of the taxonomy in a single file, and it allows users to easily see what previous versions of the taxonomy looked like. This will help users understand the gradual evolution of the taxonomy as HCPCS codes are added and assignments are updated. Another advantage of the format is that it will aid in the replication of results when the taxonomy is used at different points in time. Maintaining the RBCS history in this way will become increasingly important as the RBCS evolves over time.

The top ten new HCPCS codes in terms of spending and HCPCS code frequency are listed in Table 18 and Table 19. The majority of the highest spending and most frequent HCPCS codes are for injections and skin biopsies.

Table 18: Top Ten New HCPCS Codes in Terms of Spending

Injection, rituximab, 10 mg
Injection, durvalumab, 10 mg
Insertion of heart rhythm monitor under skin
Tangential biopsy of single skin lesion
Lutetium lu 177, dotatate, therapeutic, 1 millicurie
Injection, pegfilgrastim-cbqv, biosimilar, (udenyca), 0.5 mg
Injection, benralizumab, 1 mg
Injection, rituximab 10 mg and hyaluronidase
Injection, emicizumab-kxwh, 0.5 mg
Insertion of wireless pressure sensor into lung artery via catheter

Table 19: Top Ten New HCPCS Codes in Terms of Code Frequency

Tangential biopsy of single skin lesion
Tangential biopsy of additional skin lesion
Als routine disposable supplies
Bls routine disposable supplies
Punch biopsy of single skin lesion
Injection, rituximab, 10 mg
Neuropsychological testing evaluation by qualified healthcare professional, first 60 minutes
Fine needle aspiration of first lesion using ultrasound guidance
Injection, aprepitant, 1 mg
Psychological or neuropsychological test administration and scoring by qualified healthcare professional, first 30 minutes

Categories and subcategories for new HCPCS codes are listed in Table 20. As shown, the subcategory with the highest spending was for chemotherapy, which captured $2.7 billion in spending.

Table 20: Highest Spending Categories and Subcategories for New HCPCS Codes

Category	Subcategory	Total New HCPCS Codes	Total Allowed Amount for New HCPCS Codes ($M)
Treatments	Chemotherapy	31	$2,757
Treatments	Injections & infusions (non-oncologic)	100	$614
Procedures	Cardiovascular	24	$451
Procedures	Skin	14	$438

Category	Subcategory	Total New HCPCS Codes	Total Allowed Amount for New HCPCS Codes ($M)
Treatments	Radiation oncology	3	$169
DME	Medical/surgical supplies	51	$138
E&M	Behavioral health services	22	$132
Procedures	Other organ systems	31	$84
DME	Drugs administered through DME	28	$41
Procedures	Vascular	5	$36

Category, Subcategory, and Family Modifications

As noted earlier, part of the RBCS update process involves reviewing HCPCS code assignments to ensure that they are being categorized accurately. In addition to incidental review that occurs when new HCPCS codes are assigned to the RBCS, three additional targeted code review steps were conducted in 2021. The RBCS code assignment for add-on and primary HCPCS codes were compared; 500 HCPCS codes were randomly selected for manual review; and RBCS code assignments were compared to CCS code assignments. HCPCS codes that switched positions in the RBCS taxonomy are presented in Table 21. As indicated there, just over 300 HCPCS codes were reclassified, 205 of which were changes at the subcategory level. Of these 205 HCPCS codes, 145 switched from the digestive subcategory to the other organ systems subcategory, and 28 switched from the general laboratory subcategory to the molecular testing subcategory.

Table 21: Count of HCPCS Codes That Switched Places in the RBCS Taxonomy

	2021
HCPCS Codes That Only Switched Family	77
HCPCS Codes That Only Switched Subcategory and Family*	203
HCPCS Codes That Switched Category, Subcategory, and Family*	33

**HCPCS codes that were not part of a named family are included in these counts*

Year-over-year manual review helped to verify the accuracy of taxonomy assignments and improved the overall quality and reliability of the taxonomy. The manual review process will be an integrated part of the RBCS update process each year going forward.

Count of Categories, Subcategories, and Families

The category, subcategory, and family counts for the 2021 RBCS taxonomy are presented in Table 22. No new categories or subcategories were introduced in 2021, and no old categories or subcategories were retired. No new families were added and no families were dropped.

Table 22: RBCS Category, Subcategory, and Family* Counts

	2020	2021
Total Categories	8	8
Total Subcategories	52	52
Total Families	158	158
New Categories		-
New Subcategories		-
New Families		-
Families Retained†		5
Categories Not Carried Over		-
Subcategories Not Carried Over		-
Families Not Carried Over		-

** All family counts in this table do not include the "No RBCS Family" family*
† These are families that failed to meet the thresholds but are in the five-year retention period

Families in the Retention Period

Five families failed to meet the family identification requirements and were flagged to begin the five-year retention period (see Table 23). These families will be retained for five years or until all HCPCS codes within a family are retired from the data. Because this is the first year that the five-year retention period was implemented for the RBCS, no families are in any of the other retention periods.

Table 23: Family Retention Period Monitoring

	2021
1-Year Retention	5
2-Year Retention	0
3-Year Retention	0
4-Year Retention	0
5-Year Retention	0
Families Dropped – Expired	0
Families Dropped – Other*	0

** Families will be dropped if all HCPCS codes within the family are no longer found in the data*

Of the two families in the 2021 retention period, one failed to meet the family creation threshold when APC spending was removed from the spending calculations (see "Impact of Inflated Spending on the Family Creation Process" section of this report above).

HCPCS Codes and Spending Captured by Named Families

Given the nature of the family identification process, most HCPCS codes are not assigned to a code family. Only groups of related HCPCS codes that have a start code (high spend codes used to start families) and can account for the spending threshold of at least 0.1% of total allowed spending are assigned to a RBCS code family. Most HCPCS codes are not able to meet this criterion. However, because spending is used as part of the family creation process, RBCS code families did capture most of the spending in 2021. The breakdown by spending can be found in Table 24.

Table 24: HCPCS Codes and Spending Captured by Code Families

	2020	2021
Number of Families	158	158
Codes Assigned to a Family	4,069	4,299
Percent of Codes Accounted for by Code Families	30.3%	31.5%
Total Spending Captured	$981B	$1,022B
Percent of Total Spending Captured	88.5%	88.5%

Major Procedures

A comparison of major procedure HCPCS code count is presented in Table 25. A total of 3,470 HCPCS codes were identified as major procedure HCPCS codes in 2021, which was a slight decrease from the 3,485 HCPCS codes identified as major procedures in 2020. A similar number of HCPCS codes was identified using RVUs in both years (2,692 in 2020 vs. 2,681 in 2021), but 204 fewer HCPCS codes were identified as major procedures based on service setting in 2021 relative to 2020 (672 in 2020 vs. 468 in 2021). Some of this decrease was due to the change in how service setting was identified in 2021 (68 more HCPCS codes would have been identified if only CMS-1500 claims were used), but the remainder of the decrease would have been evident even if service setting was identified using the previous methodology.

Table 25: HCPCS Codes Identified as Major Procedures

	2020	2021
Total Major Procedures	3,485	3,470
% of HCPCS Codes in Procedures Category	55.9%	55.7%
Major Procedures Identified Using RVUs Alone	2,692	2,681
Major Procedures Identified Using Service Setting*	672	468
Major Procedures Identified as Add-On Codes	121	111
Major Procedures Retained		210

** Includes "unlisted" HCPCS codes*

Major Procedures in the Retention Period

In 2021, 210 major procedures entered year one of the three-year major procedure retention period (see Table 26). The majority of these are HCPCS codes that failed to meet the service setting requirements or were add-on HCPCS codes to primary HCPCS codes that failed to meet the service setting requirements. These HCPCS codes will be retained for three years or until they are no longer found in the data.

Table 26: Major Procedure Retention Period Monitoring

	2021
1-Year Retention	210
2-Year Retention	0
3-Year Retention	0
Major Procedures Changed to Other	0
Other Procedures Changed to Major	1
Major Procedures Changed to "N"*	2

** Major procedures will change to "N" if they switch from the procedures category to a different category*

CONCLUSION

The RBCS update process saw the addition of new HCPCS codes and the introduction of several process improvements. The RBCS taxonomy proved to be very stable, with little variation in the overall structure of the taxonomy. Manual review of RBCS code assignments improved the accuracy of the overall taxonomy.

The updates made for the current year improved the taxonomy in several ways. The addition of retention periods for families and major procedures should enhance the stability of the taxonomy and make it more useable over time. Also, this year, both CMS-1500 and UB-04 claim types were used when major procedures based on service setting were identified. This change should make the service setting identification process more consistent with how HCPCS codes are billed.

This year, the RBCS taxonomy assignments were compared to the CCS assignments, and a broad agreement was found between the two classification systems. The correspondence between these two systems supports the convergent validity of the RBCS taxonomy.

The potential addition of telemedicine services as a RBCS code family was also reviewed. Findings indicate that the creation of such a family would be complicated by a number of factors. First, most telemedicine services are billed using HCPCS codes that are not specific to telemedicine, and that can only be differentiated from non-telemedicine services by using modifiers and POS codes. Because the RBCS taxonomy does not include modifiers and POS HCPCS codes, this means that the RBCS would not be able to capture most telemedicine spending. Second, telemedicine services are authorized to be used for a wide variety of HCPCS codes, and many of those HCPCS codes are already included in other families. The creation of

a comprehensive telemedicine family would require pulling HCPCS codes from different subcategories into a single family, which would add an additional level of complexity to the RBCS. For these reasons, it is not recommended to create a telemedicine-specific family.

Several areas identified in the current RBCS update will be major areas of focus going into the next contract year. Specifically, issues will need to be resolved related to inflated spending resulting from bundled payments, and a plan will need to be developed for incorporating Medicare Part B services provided under APMs into the RBCS structure. Each of these tasks will be complex and will require an in-depth understanding of the mechanisms involved in payment determination.

Spending and Code Count by Subcategory

The full breakdown of spending by subcategory can be found in Table 27.

Table 27: Spending and Utilization by Subcategory in 2021 RBCS Update

	Allowed Spending (Millions)	% of Allowed Spending	Total Codes	% of Codes
Category: Anesthesia				
Anesthesia	$13,848	1.20%	295	2.16%
Category: DME				
Drugs administered through DME	$5,276	0.46%	65	0.48%
Hospital beds	$484	0.04%	37	0.27%
Medical/surgical supplies	$2,996	0.26%	332	2.43%
Orthotic devices	$14,680	1.27%	1023	7.50%
Other DME	$15,362	1.33%	454	3.33%
Oxygen & supplies	$4,870	0.42%	20	0.15%
Wheelchairs	$3,182	0.28%	288	2.11%
Category: E&M				
Behavioral health services	$11,679	1.01%	88	0.64%
Care management/coordination	$2,722	0.24%	45	0.33%
Critical care services	$7,619	0.66%	18	0.13%
E&M – Miscellaneous	$459	0.04%	77	0.56%
Emergency department services	$53,138	4.60%	14	0.10%
Home services	$4,103	0.36%	31	0.23%
Hospice	$16	0.00%	2	0.01%
Hospital inpatient services	$51,775	4.48%	18	0.13%
Nursing facility services	$14,516	1.26%	28	0.21%
Observation care services	$4,526	0.39%	12	0.09%

	Allowed Spending (Millions)	% of Allowed Spending	Total Codes	% of Codes
Office/outpatient services	$149,820	12.97%	69	0.51%
Ophthalmological services	$13,146	1.14%	29	0.21%
Category: Imaging				
CT scan	$22,691	1.97%	73	0.53%
Imaging – Miscellaneous	$1,949	0.17%	16	0.12%
MR	$11,806	1.02%	96	0.70%
Nuclear	$16,681	1.44%	217	1.59%
Standard X-ray	$23,608	2.04%	369	2.70%
Ultrasound	$23,367	2.02%	125	0.92%
Category: Other				
Ambulance	$33,934	2.94%	20	0.15%
Enteral & parenteral	$2,336	0.20%	41	0.30%
Vision, hearing, & speech services	$630	0.05%	114	0.84%
Category: Procedures				
Breast	$3,559	0.31%	59	0.43%
Cardiovascular	$39,943	3.46%	458	3.36%
Digestive/gastrointestinal	$31,291	2.71%	755	5.53%
Eye	$27,600	2.39%	299	2.19%
Hematology	$2,475	0.21%	68	0.50%
Musculoskeletal	$56,549	4.90%	1993	14.60%
Other organ systems	$31,516	2.73%	1736	12.72%
Skin	$29,231	2.53%	423	3.10%
Vascular	$24,222	2.10%	442	3.24%
Category: Tests				
Anatomic pathology	$11,409	0.99%	104	0.76%
Cardiography	$6,906	0.60%	88	0.64%
General laboratory	$38,933	3.37%	1101	8.07%
Molecular testing	$6,547	0.57%	425	3.11%
Neurologic	$6,269	0.54%	111	0.81%
Pulmonary function	$1,813	0.16%	43	0.32%
Test – Miscellaneous	$3,058	0.26%	156	1.14%
Category: Treatments				
Chemotherapy	$67,854	5.88%	234	1.71%
Dialysis	$65,957	5.71%	87	0.64%

	Allowed Spending (Millions)	% of Allowed Spending	Total Codes	% of Codes
Injections & infusions (non-oncologic)	$108,769	9.42%	713	5.22%
Physical, occupational, & speech therapy	$45,146	3.91%	67	0.49%
Radiation oncology	$22,248	1.93%	136	1.00%
Spinal manipulation	$3,896	0.34%	8	0.06%
Treatment – Miscellaneous	$8,340	0.72%	126	0.92%

APPENDIX A: RBCS FAMILIES

- **Category**
  - **Subcategory**
    - Family
- **Anesthesia**
  - **AA**
    - No RBCS Family
- **DME**
  - **Drugs administered through DME**
    - No RBCS Family
    - Bronchodilator
    - Vasodilator
  - **Hospital beds**
    - No RBCS Family
  - **Medical/surgical supplies**
    - No RBCS Family
  - **Orthotic devices**
    - No RBCS Family
    - Below Knee Orthotic
    - Intermittent Urinary Catheter
    - Knee Orthosis
    - Lumbar Sacral Orthosis (LSO brace)
    - Ostomy
  - **Other DME**
    - No RBCS Family
    - Blood Glucose Test or Reagent Strips
    - CPAP (Sleep Apnea)
    - Home Ventilator
  - **Oxygen & supplies**
    - No RBCS Family
    - Oxygen Concentrator
  - **Wheelchairs**
    - No RBCS Family
    - Power Wheelchairs and Accessories
- **E&M**
  - **Behavioral health services**
    - No RBCS Family
    - Psychotherapy - Group
    - Psychotherapy - Nongroup
  - **Care management/coordination**
    - Chronic & Transitional Care Management
    - No RBCS Family
  - **Critical care services**
    - Critical Care E&M
  - **Emergency department services**
    - ED E&M
    - No RBCS Family
  - **Home services**
    - Home E&M - New and Established
    - Home Health Skilled Services
    - No RBCS Family
  - **Hospice**
    - No RBCS Family
  - **Hospital inpatient services**
    - Hospital Discharge Management
    - Hospital E&M - Initial
    - Hospital E&M - Subsequent
    - No RBCS Family
  - **Miscellaneous**
    - No RBCS Family
  - **Nursing facility services**
    - No RBCS Family
    - Rest Home E&M
    - SNF E&M
  - **Observation care services**
    - Observation Care

- **Office/outpatient services**
  - Annual Wellness Visits
  - FQHC E&M - Facility Fee
  - HOPD E&M - Facility Fee
  - No RBCS Family
  - Office E&M - Established
  - Office E&M - New
- **Ophthalmological services**
  - No RBCS Family
  - Ophthalmological E&M

- **Imaging**
  - **CT scan**
    - CT/CTA Abdomen and Pelvis
    - CT/CTA Chest
    - CT/CTA Head & Neck
    - CT/CTA Spine
    - No RBCS Family
  - **Miscellaneous**
    - Computerized Ophthalmic Imaging
    - No RBCS Family
  - **MR**
    - MRI/MRA Abdomen and Pelvis
    - MRI/MRA Head and Neck
    - MRI/MRA Lower Extremity
    - MRI/MRA Other
    - MRI/MRA Spine
  - **Nuclear**
    - Myocardial Perfusion Scan
    - No RBCS Family
    - PET - Oncology
  - **Standard X-ray**
    - Angiography
    - Mammography
    - No RBCS Family
    - X-ray - Chest
    - X-ray - Lower Extremity
    - X-ray - Spine and Pelvis
    - X-ray - Upper Extremity
  - **Ultrasound**
    - Duplex Scan - Extracranial Arteries
    - Duplex Scan - Extremity Arteries
    - Duplex Scan - Extremity Veins
    - Echocardiography (TTE/TEE)
    - No RBCS Family
    - Ultrasound - Abdomen & Pelvis
    - Ultrasound - Nonspecific

- **Other**
  - **Ambulance**
    - Medical Transport Air
    - Medical Transport Ground
    - Medical Transport Ground Emergency
    - Medical Transport Mileage
    - No RBCS Family
  - **Enteral & parenteral**
    - Enteral Feeding and Formula
    - No RBCS Family
    - Parenteral Feeding and Formula
  - **Vision, hearing, & speech services**
    - No RBCS Family

- **Procedures**
  - **Breast**
    - Mastectomy
    - No RBCS Family
  - **Cardiovascular**
    - Comprehensive Electrophysiologic Evaluation
    - Insertion/Removal/Replacement ICD
    - No RBCS Family
    - Pacemaker Insertion or Repair
    - Pacemaker Removal
    - Percutaneous Coronary Artery Angioplasty and Stenting
    - Percutaneous Transcatheterization

- **Digestive/gastrointestinal**
  - Cholecystectomy - Laparoscopic
  - Colonoscopy - Lesion Removal
  - Hernia Repair - Laparoscopic (Any Site)
  - Hernia Repair - Open (Inguinal)
  - Lower GI Endoscopy - Other
  - No RBCS Family
  - Upper GI Endoscopy
- **Eye**
  - Cataract Surgery
  - Intravitreal Injection
  - No RBCS Family
  - Vitrectomy - Mechanical
- **Hematology**
  - No RBCS Family
  - Red Blood Cell Transfusion
- **Musculoskeletal**
  - Arthrodesis Spine
  - Arthroplasty - Hip
  - Arthroplasty - Knee
  - Arthroscopy - Lower Extremity
  - Arthroscopy - Upper Extremity
  - Destruction by Neurolytic Agent - Back
  - Joint Injection
  - Laminotomy or Laminectomy - Lumbar
  - Nerve Block Injection - Back
  - Neurostimulator - Back
  - No RBCS Family
  - Percutaneous Vertebroplasty
- **Other organ systems**
  - Bronchoscopy
  - Calculus Removal - Urinary
  - Cystourethroscopy
  - Lymph Node Biopsy
  - Nasal/Sinus Endoscopy
  - No RBCS Family
  - Prostate Resection
- **Skin**
  - Debridement
  - Destruction Skin Lesion
  - Mohs Surgery
  - Nail Procedure
  - No RBCS Family
  - Skin Biopsy
  - Skin Grafting
  - Skin Lesion Excision
  - Wound Repair - All Levels
- **Vascular**
  - A-V Fistula Creation
  - A-V Fistula PCI
  - No RBCS Family
  - Transluminal Angioplasty - Arterial
  - Transluminal Angioplasty - Venous
  - Transvascular Stent
  - Varicose Vein Ablation
  - Vascular Embolization
  - Venous Catheter Insertion

- **Tests**
  - **Anatomic pathology**
    - Immunohistochemistry
    - No RBCS Family
    - Surgical Pathology Examination
  - **Cardiography**
    - Electrocardiogram
    - External Electrocardiographic Monitoring
    - No RBCS Family
  - **General laboratory**
    - Bacterial Culture
    - Blood Count
    - Clinical Chemistry
    - Drug Tests
    - Immunoassay
    - No RBCS Family
    - Venipuncture Blood Collection
  - **Miscellaneous**
    - No RBCS Family

- **Molecular testing**
  - Immunoassay
  - Infectious Agent Detection by DNA/RNA
  - No RBCS Family
- **Neurologic**
  - Electrical Nerve Conductivity
  - No RBCS Family
  - Sleep Study
- **Pulmonary function**
  - No RBCS Family

- **Treatments**
  - **Chemotherapy**
    - Chemotherapeutic Agent
    - Chemotherapy Administration
    - No RBCS Family
  - **Dialysis**
    - ESRD Related Services (Not Dialysis)
    - Hemodialysis
    - No RBCS Family
    - Peritoneal Dialysis
  - **Injections & infusions (non-oncologic)**
    - Erythropoiesis-Stimulating Agent
    - Injection - Anticoagulant
    - Injection - Clotting Factors
    - Injection - Colony Stimulating Factors
    - Injection - Enzymes
    - Injection - Growth/Hormone Factor
    - Injection - Hyaluronan or Derivative
    - Injection - Immune Globulin
    - Injection - Immunomodulator
    - Injection - Macular Degeneration
    - Injection - Monoclonal Antibodies
    - Injection - Somatostatin
    - Injection - TNF Blocker
    - Injection - Vasodilator
    - Injection Administration
    - Intravenous Infusion, Hydration
    - No RBCS Family
    - Vaccine - Toxoids
    - Vaccine Admin - Flu, Pneum, & Hep B
  - **Miscellaneous**
    - Cardiac Rehabilitation
    - Hyperbaric Oxygen
    - Immunosuppressive Drugs - Non-Injectable
    - No RBCS Family
  - **Physical, occupational, & speech therapy**
    - Occupational Therapy
    - PT Treatment
    - PT/OT Evaluation
    - Speech Therapy
  - **Radiation oncology**
    - Conventional Radiation Treatment
    - Intensity Modulated Radiation Therapy (IMRT)
    - No RBCS Family
    - Radiation Treatment Planning
  - **Spinal manipulation**
    - Chiropractic
    - No RBCS Family

APPENDIX B: OVERVIEW OF MEDICARE APMS

Model	(Anticipated) Start Date	Payment Arrangement	Payment Type	FFS Claims Impact
Model Type: Medical Home/Primary Care				
• Comprehensive Primary Care Plus (CPC+) • Maryland Primary Care Program (MDPCP)	• 1/2017 • 1/2019	• PBPM non-visit-based payment (CMF, PBIP) • Hybrid non-visit-based payment (CPCP)	• Prospective • Prospective/ Concurrent	• No FFS impact • No FFS impact/ discounted FFS
• Primary Care First (PCF)	• 1/2021	• PBPM non-visit-based payment • Primary care visit flat fee • Shared savings/losses	• Prospective • Concurrent • Retrospective	• No FFS impact • E&M FFS HCPCS codes • No FFS impact
Model Type: Accountable Care Organization (ACO)				
• Medicare Shared Savings Program (MSSP) • Next Generation ACO • Vermont Medicare ACO Initiative	• 2012 • 1/2016 • 1/2017	• Shared savings/losses	• Retrospective	• No FFS impact (except for Next Generation ACO's voluntary all-inclusive population-based payments)
• Comprehensive ESRD Care (CEC)	• 10/2015	• Shared savings/losses	• Retrospective	• No FFS impact
Model Type: Episodic/Bundled				
• Bundled Payments for Care Improvement (BPCI) Classic – Models 1, 2, 3	• 10/2013	• Episode bundled payment	• Retrospective	• No FFS impact

Model	(Anticipated) Start Date	Payment Arrangement	Payment Type	FFS Claims Impact
• BPCI Classic – Model 4	• 10/2013	• Episode bundled payment	• Prospective	• No-pay FFS claims (but still have allowed charges on MPFS)
• BPCI Advanced	• 10/2018	• Episode bundled payment	• Retrospective	• No FFS impact
• Comprehensive Care for Joint Replacement (CJR)	• 4/2016	• Episode bundled payment	• Retrospective	• No FFS impact
• Oncology Care Model (OCM)	• 7/2016	• Episode bundled payment • PBPM non-visit-based payment • Performance-based shared savings	• Retrospective • Prospective • Retrospective	• No FFS impact • No FFS impact • No FFS impact
• Radiation Oncology (RO) Model	• 1/2022	• Episode bundled payment	• Prospective	• RO Model-Specific HCPCS codes on MPFS or OPPS for start/end of episode • No-pay FFS claims for services within start/end of episode (but still have allowed charges on MPFS/uncertain for OPPS)

Model	(Anticipated) Start Date	Payment Arrangement	Payment Type	FFS Claims Impact
Model Type: Capitated				
• Direct Contracting (DC) Model for Global and Professional Options	• 4/2021	• Primary Care Capitation (PCC) • Total Care Capitation (TCC) • Optional advanced payment of estimated FFS non-primary care claims (for PCC) • Shared savings/losses	• Prospective • Prospective • Prospective • Retrospective	• No FFS impact (but there will be some no-pay, some discounted, and some 100% primary care FFS claims) • No FFS impact (but there will be some no-pay, some discounted, and some 100% FFS claims) • No FFS impact (reconciled against claims at end of year) • No FFS impact
• Kidney Care Choices (KCC) Model – Kidney Care First (KCF) Option	• 1/2022	• Performance-adjusted monthly and quarterly capitated payments • Bonus payment for successful kidney transplant	• Prospective with retrospective performance adjustment • Retrospective	• No FFS impact (but there could be some no-pay claims) • No FFS impact
• KCC – Comprehensive Kidney Care Contracting (CKCC) Graduated Option • CKCC Professional Option	• 1/2022	• TCC monthly and quarterly capitated payments (Global Option) • Bonus payment for successful kidney transplant	• Prospective • Retrospective • Retrospective	• No FFS impact (but there could be some no-pay claims) • No FFS impact • No FFS impact

Model	(Anticipated) Start Date	Payment Arrangement	Payment Type	FFS Claims Impact
• CKCC Global Option		• Shared savings/losses		
• ESRD Treatment Choices (ETC) Model	• 1/2022	• Payment adjustments to the adjusted ESRD PPS per treatment base rate to ESRD facilities required to participate • Payment adjustments to the monthly capitation payment (MCP) to managing clinicians required to participate	• Concurrent • Concurrent	• May see higher or lower current ESRD claim amounts • May see higher or lower current ESRD claim amounts
• Home Health Value-Based Purchasing Model (Part B spending)	• 1/2016	• Performance-based payment adjustments to the Home Health PPS base rate in participating states	• Concurrent	• May see higher Home Health Part B claim amounts