Chronic Conditions Warehouse

Your source for national CMS Medicare and Medicaid research data

Chronic Conditions Warehouse Virtual Research Data Center

Medicare Encounter Data File User Guide

JUNE 2025 | VERSION 2.10

Revision Log

Date	Changed by	Revisions	Version
June 2025	K. Schneider	Updated Chapter 3 enrollment data to reflect MBSF ABCD V2 data file	2.10
June 2023	D. Happe	Added "(excluding most federal holidays)" to the "Where to Get Assistance" section	2.9
January 2023	K. Schneider	Removed last bullet point in Section 2 Chart Review Records. Clarified method information for removing duplicate records in Question 1 in Appendix B	2.8
December 2022	K. Schneider A. Sisco	Changed "researcher" to "MAO" and modified a sentence in the last bullet point in Section 2 Chart Review Records	2.7
August 2022	K. Schneider	Inserted note concerning the small number of duplicate lines starting with 2018 inpatient and outpatient files (through the current data year) and added code example to Appendix B	2.6
November 2021	K. Schneider D. Happe	Changed to CCW voice, updated text to reflect CCW receipt of only final action encounter records and the associated decline in duplicate records	2.5
June 2021	R. Van Gilder	Removed encounter record counts in prior Figure 1 and prior Appendix B	2.4
November 2020	K. Schneider R. Van Gilder	Added information regarding 2018 data, clarified the use of place service code, and converted to a new document template	2.3
May 2020	K. Schneider R. Van Gilder	Added information regarding 2017 data	2.2
December 2019	K. Schneider R. Van Gilder	Added information regarding 2016 data	2.1
May 2019	K. Schneider R. Van Gilder	Updated from preliminary to final 2015 files	2.0
July 2018	K. Schneider R. Van Gilder	Created initial document	1.0

Table of Contents

List of Tables

List of Figures

Overview

Medicare is the primary health insurance program for people aged 65 or older, under age 65 with disabilities, and people of all ages with End-Stage Renal Disease (ESRD). Nearly all Medicare beneficiaries receive Part A hospital insurance benefits, which help cover inpatient hospital care, skilled nursing facility stays, home health, and hospice care. Most beneficiaries also subscribe to Part B medical insurance benefits, which help cover physician services, outpatient care, durable medical equipment (DME), and home health care. Additionally, many beneficiaries elect to purchase Medicare Part D prescription drug coverage (available since 2006).

Beneficiaries may elect to receive original fee-for-service (FFS) Medicare or, as an alternative, enroll in Medicare Part C (Medicare Advantage, or MA). Medicare Advantage Organizations (MAOs) sponsor privately managed care plans, such as Health Maintenance Organizations (HMOs), Preferred Provider Organizations (PPOs), private fee-for-service plans (PFFS), and Special Needs Plans (SNPs) that provide Medicare Part A and Part B services. The Medicare.gov website[1] explains the Medicare managed care benefit in greater detail

In general, Medicare pays a fixed amount for each Part C enrolled beneficiary each month to the companies the Centers for Medicare & Medicaid Services (CMS) has approved to offer Medicare Advantage plans. The MAOs must follow the minimum coverage rules set by Medicare for Part A and Part B benefits.[2] The one exception to this rule is hospice. Regardless of whether MA or FFS enrolls the beneficiary, Medicare pays hospice services as FFS rather than part of the managed care plan's offerings. MA plans may also offer additional coverage, such as vision, hearing, dental, or wellness programs. Most MA plans include the Medicare Part D prescription drug benefit (all except PFFS plans[3]) — known as MA-PD plans.

While an MA plan may offer additional coverage as a supplemental benefit, it may not limit the original Medicare coverage. Plans may limit enrollees' choice of providers more narrowly than under the traditional FFS program. Each MA plan can charge different out-of-pocket costs and have different rules for how beneficiaries receive services (e.g., whether beneficiaries need a referral to visit a specialist or if beneficiaries have to seek care from providers within the plan's network for non-emergency or non-urgent care). These rules can change each year.[4]

The CMS uses the Chronic Conditions Warehouse (CCW) to develop and manage the CMS research data resources. The CCW creates the Medicare research data files from the CMS enrollment files, FFS administrative claims submitted for payment to the CMS, and encounter data submitted by MAOs to CMS. The CCW contains complete (100 percent) Medicare enrollment and eligibility information for all beneficiaries, whether in the FFS program or an MA plan. Also, the CCW includes complete data for Part A and Part B FFS claims, complete data for Part D prescription drug events (starting in 2006), and MA encounter data submitted by MAOs (starting in 2015). The CCW also contains assessment

---

[1] Centers for Medicare & Medicaid Services (CMS). "Your Medicare Coverage Choices." https://www.medicare.gov/sign-up-change-plans/decide-how-to-get-medicare/your-medicare-coverage-choices.html (Accessed 6/20/2025)
[2] CMS. "Medicare Managed Care Manual. Chapter 4 – Benefits and Beneficiary Protections." https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/mc86c04.pdf (Accessed 6/20/2025)
[3] MedPAC. "Medicare Advantage program payment system." November 2021. Medicare Advantage program payment system – MedPAC (Accessed 6/20/2025)
[4] CMS. "How do Medicare Advantage Plans Work?" https://www.medicare.gov/basics/get-started-with-medicare/medicare-basics/how-does-medicare-work#advantage (Accessed 6/20/2025)

data (e.g., Minimum Data Set [MDS] and Outcome and Assessment Information Set [OASIS]), and Medicaid eligibility and claims data (the Medicaid Analytic eXtract [MAX] files and, more recently, the Transformed Medicaid Statistical Information System (T-MSIS) Research Identifiable Files [TAF RIFs]). This guide provides users with information about working with the CCW Medicare encounter data files and understanding the limitations of those files.

Chapter 1: Overview of Medicare Advantage

The Medicare Prescription Drug, Improvement, and Modernization Act (MMA) expanded beneficiaries' options for participation in MA plans.[5] Since 2007, the number of Medicare beneficiaries with Part A and B coverage who selected MA plans has increased.[6]

A. Types of MA Plans

MAOs may operate as either local or regional plans. An MAO may have multiple contracts that cover different geographic regions or offer different types of plans. The breakdown of MAOs that CMS contracts with monthly are available on the CMS website.[7] Regional plans are all organized as PPOs and cover entire states or multi-state regions. The remaining plans are private plans, such as the Programs of All-Inclusive Care for the Elderly (PACE), plans paid on a cost basis (i.e., cost plans), or demonstrations. FFS claims data partially captures Medicare utilization for cost plan and PACE enrollees (e.g., Medicare pays cost plan institutional claims as FFS). Researchers can identify cost and PACE plans by using CMS's monthly contract enrollment data (i.e., organization type of "HCPP — 1833 Cost," "1876 Cost," or "National PACE").[8] This monthly field is available in the Master Beneficiary Summary Base File-A/B/C/D segment using the monthly PTC_PLAN_TYPE_CD_MM variable.

Nearly all MA plans offer at least one plan that covers the Part D drug benefit.

B. MAO Requirements

MAOs are responsible for providing Medicare benefits by furnishing the benefits directly to enrollees, through arrangements with providers, or by paying for the benefits on behalf of enrollees.[9] **CMS does not require MAOs to follow original Medicare claims processing procedures.**

The health care providers (either professionals or institutions) who serve the beneficiaries enrolled in the MA plan submit claims for payment to MAOs. Participating MAOs utilize a variety of payment systems. The MAO may pay some providers on a capitated basis or through bundling of services. Capturing all the services within these arrangements may be difficult when the MAO does not separately pay for each service.

---

[5] SSA. "Medicare Program Description and Legislation. Annual Statistical Supplement, 2015." https://www.ssa.gov/policy/docs/statcomps/supplement/2015/medicare.html (Accessed 6/20/2025)
[6] CMS. Medicare Enrollment Dashboard. https://data.cms.gov/tools/medicare-enrollment-dashboard (Accessed 6/20/2025)
[7] CMS. Monthly Contract and Enrollment Summary Report. https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/Monthly-Contract-and-Enrollment-Summary-Report.html (Accessed 6/20/2025)
[8] CMS. "Medicare Advantage/Part D Contract and Enrollment Data." https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/Monthly-Enrollment-by-Contract.html (Accessed 6/20/2025)
[9] CMS. "Medicare Managed Care Manual. Chapter 4 – Benefits and Beneficiary Protections." https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/mc86c04.pdf (Accessed 6/20/2025)

Chapter 2: What is Medicare Advantage Encounter Data?

The Medicare Advantage encounter data reflect services provided to beneficiaries through the Medicare Part C benefit. MAOs must submit data, according to CMS instructions, to characterize the context and purposes of items and services provided to their enrollees by a provider, supplier, physician, or other practitioner.[10] There are essential differences between MA encounter data and Medicare FFS data. Therefore, researchers should consider the limitations when using the MA encounter data (reference Chapter 4, Section B for more details).

The primary purpose of MA encounter data is to determine the risk adjustment factors used to adjust CMS' payments to MAO; these require diagnosis information from MA plans. However, the risk adjustment factors only include MA encounter data from certain claim types — inpatient, outpatient, and professional services (that CCW delivers as the "Carrier Encounter" file). CMS also uses MA encounter data to update risk adjustment models, conduct quality review and improvement activities, and program oversight.

MA encounter data are not the sole input for determining risk adjustment payments to MAOs. Therefore, data users cannot currently replicate beneficiary risk scores with encounter RIF data. MAOs submit diagnoses and a limited set of additional data elements separately through the CMS Risk Adjustment Processing System (RAPS). CMS has used diagnostic information included in MA encounter data as a partial source for risk adjustment, determining CMS' beneficiary-level payments to MAOs. Still, it does not directly affect MAO payments to providers.

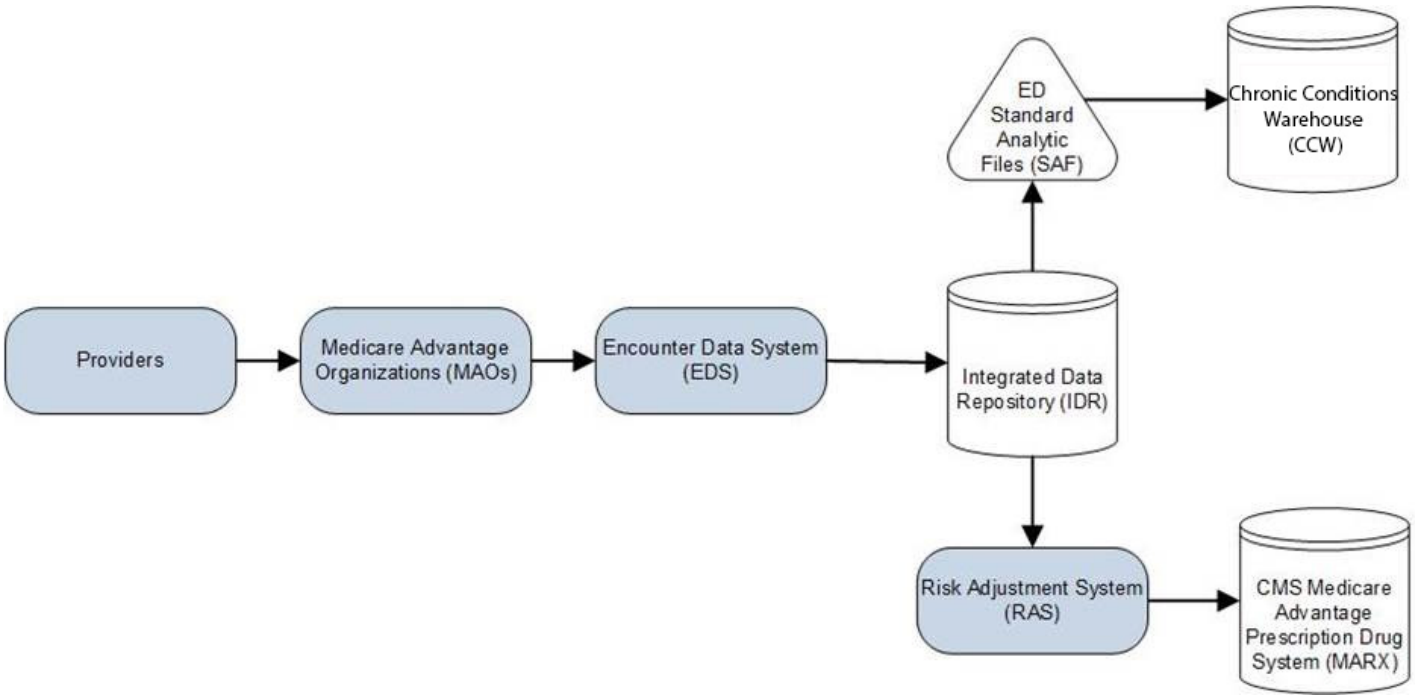
A. Source Data

MAOs must send MA encounter data to CMS using the standard health care claim 837, 5010 record format set by the American National Standards Institute (ANSI) Accredited Standards Committee. CMS has been receiving data from MAOs since 2012 through the Medicare Advantage Encounter Data System (MA EDS). The MA EDS comprises two systems, one for data submission (the front end) and another for data processing (the back end). MAOs submit MA encounter data through the front end. The MA EDS front end sends reports to MAOs that include notification of syntax and formatting errors, and acknowledgment of which MA encounter data CMS has accepted and rejected. Subsequently, the front end performs automated checks, e.g., to determine if the MAO has submitted key data elements. Once CMS successfully processes the MA encounter data by the front end, CMS sends them to the back end for editing and validation. CMS notifies MAOs about which records they accepted and rejected, and if rejected, CMS explains why. The CMS Integrated Data Repository (IDR) updates and stores these MA encounter data (reference Figure 1).

The IDR is the data source that CMS uses to extract MA encounter data standard analytic files (SAFs) loaded into the CCW. The CCW team then extracts encounter SAF data from the CCW database and produces the RIFs.

[10] e-CFR. Title 42.Chapter IV. Subchapter B, Part 422, Subpart G §422.310. https://www.ecfr.gov/cgi-bin/text-idx?SID=8d82851302026fa9501ff2cb62483255&mc=true&node=se42.3.422_1310&rgn=div8 (Accessed 6/20/2025)

Figure 1. Encounter data processing flow



CMS extracts the encounter SAFs from the IDR, and the CCW team loads them into the CCW database. It may take multiple iterations for MAOs to submit encounter data to CMS that is complete and accurate; that is, an MAO may resubmit a single encounter multiple times. Each submission generates a separate version of the encounter record. The SAFs include only the final occurrence of the encounter data at the point in time when CMS extracts the data.

There is a set cut-off date for plans (MAOs) to submit MA encounter data for inclusion in the risk adjustment payment process. In general, MAOs must submit the data 13 months after the end of the service year. However, in some years, CMS grants deadline extensions to accommodate various circumstances.[11] CMS accepts encounter records beyond this deadline to capture a complete universe of services, but CMS does not use those encounters for risk adjustment purposes. In general, MAOs submit most encounter data before the cut-off date for inclusion in the risk adjustment payment process.

1. Encounter Data Records

An encounter data record indicates a service provided to a beneficiary enrolled in the MA plan. Because CMS organizes the MA program differently than the FFS program, there are several differences between encounter data records and claims, such as: 1) the record of service is reported to CMS by the MAO, rather than directly by the

[11] For payment years 2016 and 2017 (2015 and 2016 dates of service, respectively), CMS allowed MAOs to submit encounter records through September 14, 2018, beyond the typical 13-month deadline. CMS intended the extension of this deadline to facilitate the submission of complete encounter data, and improve the accuracy of risk adjustment payments, by allowing plans additional time to refine their submissions to the Encounter Data System.

provider, 2) multiple records may be associated with the same service, 3) some encounter data records contain service codes that FFS does not use (e.g., HCPCS codes for transportation services), and 4) service information on an encounter data record may not always be populated for all fields that are either situational to the service or not required by the MA EDS.

2. Chart Review Records

Chart review records are a type of MA encounter data that allow MAOs to add or remove diagnoses identified through medical record reviews that are different from diagnoses initially reported on encounter data records. MAOs may submit chart review records for any service type, and there are no limitations on the number of chart review records allowed in totality or per encounter.[12] Chart reviews would be a way for MAOs to submit complete service-level diagnosis information if, for example, an encounter generated more diagnosis codes than the maximum number of diagnosis code spaces on an encounter data record (12 for professional, 25 for institutional). MAOs may submit two types of chart review records to the MA EDS:

- **Linked chart reviews —** linked to an original encounter data record or another chart review record through the claim control number (i.e., CLM_ORIG_CNTL_NUM of chart review record is equal to the CLM_CNTL_NUM of the original encounter data record or chart review record). The chart review record may not appear in the same data file as the associated encounter data record.MAOs use linked chart review records to add or delete risk adjustment eligible diagnoses
- **Unlinked chart review records** — not linked to an original encounter data record or chart review record through the claim control number. MAOs can use unlinked chart reviews to add risk adjustment eligible diagnoses but cannot use these to delete diagnoses

MAOs can perform the following actions through a chart review record.[13]

- Add specific diagnoses not reported on an original or replacement encounter data record or prior chart review record
- Delete specific diagnoses from a prior encounter data record or chart review record. As MAOs intend all chart review deletions to delete from a previously submitted record, researchers can only correctly identify diagnosis deletions when they trace the CLM_ORIG_CNTL_NUM of the chart review back to the CLM_CNTL_NUM of the original record (a “linked” chart review, as discussed above). Otherwise, users cannot identify which diagnoses to delete from the original record
- Replace a chart review record with another chart review record entirely. MAOs can use replacements to add or delete diagnoses on linked chart review records. When the replacement record contains a new diagnosis compared to the linked chart review record, the new diagnosis becomes an addition to the record. When the replacement record omits a diagnosis that is on the previously submitted linked chart review record, that

[12] MAOs may submit chart review records for any service type; however, only certain types are eligible for risk adjustment — inpatient, outpatient, and professional (carrier claim type).
[13] CMS. Customer Service and Support Center Job Aids, Encounter, and Risk Adjustment Program. Medicare Advantage Organization MAO-004 User Guide. https://www.csscoperations.com/internet/csscw3.nsf/DID/M0GJLGB6D8 (Accessed 6/11/2025).

diagnosis becomes a deletion to the record. Diagnoses on both the replaced record and the replacement record stay intact

Additional details regarding the identification of these records are in Chapter 4, Section A.

MAOs submit chart review records on the same 837, 5010 version record format as other encounter data records. CMS processes chart review records in the MA EDS the same way as other encounter data records. Researchers may identify chart review records in the encounter files with the chart review switch (variable called CLM_CHRT_RVW_SW ='Y'). In some cases, chart review records may be the only record of a particular service in the MA encounter data. There may be multiple chart reviews related to a single service, as the MAO may add and delete diagnoses to a record. Reference section Chapter 4, Section A for more information on choosing appropriate records for a study.

B. CCW Medicare Encounter RIFs

The CCW team obtains all final accepted MA encounter data available when CMS extracts the data from the IDR. When the CCW team creates the encounter RIFs, they retain all the encounter records and chart review records provided in the SAF. The MA encounter data RIFs are annual files that the CCW team partitions using the date a service ended (i.e., claim through date). The CCW team considers the current RIFs "final" as the files include records submitted through the date when the CMS closed the submission window for risk adjustment calculation.[14]

The CCW MA encounter data RIFs may contain multiple records of the same encounter due to chart review records. There is a final action flag (variable called CLM_FINL_ACTN_IND) for encounter records to assist users in identifying records to include in their study. The CCW team uses the term "final action" differently in MA encounter data than with FFS claims. In FFS, "final action" means the most recent, adjudicated claim where the CMS team has resolved all adjustments to earlier claims using CMS business rules. In the encounter data, "final action" refers to the latest version of an encounter data record, but CMS does not adjudicate encounter data. Additional details and guidance for identifying the version of the record that is suitable for typical study questions appear in Chapter 4, Section A.

The CCW assigns a unique beneficiary identifier (BENE_ID) to each record, consistent across files in the CCW. The CCW also partitions the records into base records that contain the header portion of the encounter data record, and revenue center or line records that contain the trailer portion of the encounter data record.

The encounter data files contain key variables that researchers can use to join the files together when appropriate (e.g., the BENE_ID, the CLM_TYPE_CD, and the claim line/record join key [variable called ENC_JOIN_KEY]). The linkage keys used may vary depending on the files researchers are attempting to join. For example, when medical services provided to a beneficiary are the focus, the primary linkage is at the person level (i.e., the BENE_ID) after aggregating the encounter level files. Data file users may also wish to join information from encounter data files to other CCW files, such as Medicare enrollment and plan characteristics; additional information about linking to these other files appears in Chapter 3, Section A.

[14] The IDR creates the "final" versions of the SAF Encounter files after the submission window closes for a given plan year. Therefore, the RIFs may contain records not included in risk adjustment calculations.

1. Structure of MA Encounter Data RIFs

The CCW MA encounter data RIFs consist of all final action encounter data records for a given year and chart reviews when applicable. Therefore, duplicate services across multiple final action records may exist, and users should make appropriate adjustments when identifying distinct services. Additional information regarding the identification of distinct services or populations appears in Chapter 4, Section A.

Encounter RIFs are available for six settings: inpatient (IP), skilled nursing facility (SNF), home health (HH), institutional outpatient (OP), professional, and DME. The FFS program pays for hospice services; since MA plans do not pay for hospice services there is no hospice file for MA. The CCW website contains summary data tables that depict the count of MA enrollees (web table A.1.c) and the number of encounter service records and chart review records in the RIFs (web table C.1.b.).

The RIF data for each of the settings has header and trailer records, referred to as the "base" and "line" or "revenue center" files. The ***base file*** contains the base encounter record, while the ***line file or revenue center file*** may contain multiple revenue centers (for records from institutional settings) or line items (for non-institutional settings) for a corresponding base encounter record.

- **Base file** — this file contains MA encounter data header information such as the claim control number, beneficiary ID, claim type, claim chart review switch, claim from date, claim through date, processing date, provider ID, plan ID, admitting diagnosis, primary diagnosis, and up to 25 additional diagnosis code fields and 25 procedure codes with associated dates, as well as the diagnosis-related group (DRG) (for inpatient records). The base record layout only allows for up to 12 diagnosis codes for professional and DME files

The revenue centers represent institutional cost centers that are distinct cost centers within an institution that can each submit separate charges. For example, there are revenue centers for emergency department (ED), intensive care, physical therapy, laboratory, pharmacy, blood, imaging, etc. It is common to use the revenue center detail if researchers are interested in the outpatient file because the revenue center contains important information to help distinguish between care settings (e.g., clinic versus dialysis care).

- **Revenue center file** — this file contains the line-level procedures (HCPCS) for the institutional encounter. Revenue center fields available for the institutional encounter records (IP, SNF, HH, and OP) include the claim control number, claim type, HCPCS, revenue center code, revenue center date, rendering physician ID, and revenue center unit count

  The CCW team has identified an issue starting with the 2018 Medicare encounter inpatient and outpatient records (through the current data year) that originated in the source data provided to CCW. In a small number of cases, there are duplicate lines associated with the header record. The revenue file has two lines with all values identical except the CCW derived LINE_NUM.[15]

[15] CMS shares an analytic code example for identifying these duplicate lines in Appendix B: Additional Encounter Data Analytic Considerations.

Researchers can link the base and revenue center file records for MA encounter data using the BENE_ID, CLM_TYPE_CD, and the ENC_JOIN_KEY. The CCW team numbers the revenue center lines sequentially using the claim line number (CLM_LINE_NUM).

- **Line file** — this file contains the individual line level information from the non-institutional encounter (i.e., for professional or DME records). This includes the HCPCS code(s), first and last expense dates, and performing provider identifiers

  The line-item detail contains important information on procedures performed by providers who cared for the patient. Researchers can link the base and line files for an encounter using the BENE_ID, CLM_TYPE_CD, and the ENC_JOIN_KEY. The CCW team numbers the line file records for the encounter sequentially using the claim line number (CLM_LINE_NUM).

- **Reference code files** — four types of reference code files are available to link to the base encounter for the institutional encounter types (i.e., IP, SNF, HH, and OP), including condition, occurrence, span, and value code files. Researchers rarely use these files; however, they contain special conditions that may affect payer processing. For example, outpatient encounters may include information on whether additional health indicators factored into the service provided, such as hemoglobin reading and patient weight. Reference Table 1 for more details on reference code files

Table 1. Reference code files

Filename	Description
Condition codes	Codes indicating a condition relating to an institutional encounter (e.g., insurance related, special condition, student status, accommodation, CHAMPUS, SNF, etc.). Information in the condition code file may help identify outlier payment situations (e.g., disproportionate share).
Occurrence codes	Codes identifying a significant event/date relating to an institutional encounter (e.g., accident, medical condition, insurance related, service related, etc.). The record lists the corresponding date of the occurrence.
Span codes	Codes relating to an institution (e.g., exhausted all full/coinsurance days but covered on the cost report, hospital prior stay dates, visits occurring in this billing period if different, etc.). The record gives the from and through dates during the situation indicated in the span code.
Value codes	Codes indicating the value of a monetary condition used by the intermediary to process an institutional encounter (e.g., the wage index CMS applies to home health care due to the beneficiary location).

Researchers link the base and reference code file records for an encounter using the same fields described above: BENE_ID, CLM_TYPE_CD, ENC_JOIN_KEY, and the sequence number field within each file numbers the lines sequentially (e.g., the claim related occurrence code sequence RLT_OCRNC_CD_SEQ).

2. Variables on MA Encounter Data RIFs

The variables on the CCW encounter RIF are like variables on the FFS claims RIF, whenever possible. The information available in the encounter data includes the CCW-assigned beneficiary ID, claim type, organization provider number, dates of service, claim processing date, claim control number, and diagnosis and procedure codes. Encounter RIFs don't include payment variables due to this information's proprietary and confidential nature.

A complete list of variables is available in the *CCW Encounter Records Codebook*. The CCW team highlights key encounter variables below:

- **Claim control number** — the field (CLM_CNTL_NUM) identifies a unique version in combination with the original claim control number (CLM_ORIG_CNTL_NUM) of a service record. Before October 1, 2015, multiple iterations of a single service (i.e., a particular type of claim for a specific service date for the person) may be present in the encounter RIFs; the data during this time does not limit records to the final version of the encounter record. For all records beginning October 1, 2015, it is rare but possible that two final action records that MAOs submit separately are duplicative. When multiple records for a service exist, the higher the claim control number, the later CMS adjusted it (i.e., the highest CLM_CNTL_NUM is the newest version of the encounter)

- **Original claim control number** — when an MAO submits an adjustment, the claim control number (CLM_CNTL_NUM) for the encounter record that MAO is adjusting populates in the CLM_ORIG_CNTL_NUM field — and assigns a new CLM_CNTL_NUM to this updated record. A null/missing CLM_ORIG_CNTL_NUM indicates that the MAO has not adjusted a prior encounter record. Generally, this implies that it is the first occurrence of an encounter service record, but occasionally, multiple record submissions for the same service may appear as original encounters

- **Organization NPI number** — this is the CMS National Provider Identifier (NPI) number assigned to uniquely identify the institutional provider billing/providing the services to the beneficiary (ORG_NPI)

- **Claim from and through dates** — the first date of service (CLM_FROM_DT) on the billing statement/encounter record covering services rendered to the beneficiary (i.e., the record covers services starting on this date). The claim from date may not always correspond with the first date the beneficiary received services (i.e., it is not always equal to admission date) if the provider rendered services over a long period, such as for lengthy SNF stays or HH episodes. Similarly, the claim through date (CLM_THRU_DT) is the last day on the billing statement services rendered to the beneficiary (i.e., the record covers services through this date). This may not always correspond with the last date the beneficiary received services (i.e., it is not always equal to the discharge date)

- **Claim type code** —This field (CLM_TYPE_CD) identifies types of care settings. CCW includes claim types within each encounter data file. Table 2 lists values

- **Claim chart review switch** — this field (CLM_CHRT_RVW_SW) indicates a record is a chart review record. Values are either “Y” or null

- **Final action indicator** — the IDR stores this field (CLM_FINL_ACTN_IND) as the final action indicator, indicative of the last adjustment to a record. Researchers will find encounter records marked as CLM_FINL_ACTN_IND = ‘N’ when a chart review record

Table 2. Claim type code by file type

Encounter file	CLM_TYPE_CD	Description
IP	4011	Hospital inpatient
	4041	Religious nonmedical health care institutions — hospital inpatient
SNF	4018	Hospital swing beds
	4021	SNF skilled nursing inpatient
SNF	4028	SNF skilled nursing swing beds
HH	4032	Home health + inpatient (inpatient covered by Medicare Part B — not Part A)
	4033	Home health + outpatient
OP	4012	Hospital inpatient (covered by Medicare Part B — not Part A)
	4013	Hospital outpatient
	4014	Hospital laboratory services provided to nonpatients
	4022	SNF skilled nursing inpatient (covered by Medicare Part B — not Part A)
	4023	SNF skilled nursing outpatient
	4034	Home health + laboratory services provided to nonpatients
	4071	Clinic (RHC) rural health
	4072	Clinic (ESRD) renal dialysis hospital-based or independent
	4073	Clinic free-standing
	4074	Clinic (ORF) outpatient rehab facility
	4075	Clinic (CORF) comprehensive outpatient rehab facility
	4076	Clinic (CMHC) community mental health centers
	4077	Clinic (FQHC) Federal Qualified Health Center
	4079	Clinic — other
	4083	Special facility (ASC) ambulatory surgery center
	4085	Special facility (CAH) critical access hospital
	4089	Special facility — other
Professional	4700	Professional
DME	4800	DME

Institutional providers. Encounter data from institutional providers and settings required through the Medicare Part A benefit, appear in the IP, SNF, and HH files. In addition, encounters for institutional-based services covered by the Medicare Part B benefit (e.g., home health, institutional outpatient) appear in the HH and OP files, respectively. For each setting, there are a base file, revenue center file, and reference code files (condition, occurrence, span, and value code files). The files for institutional providers include the following:

- **IP** — this file is for inpatient services and includes ICD-9 and ICD-10-CM diagnoses and procedure codes, DRG information, dates of service, organization provider ID (National Provider Identifier [NPI]), and beneficiary demographic information. This file includes services from inpatient rehabilitation facilities, inpatient psychiatric facilities, and long-term care hospitals. Encounter data does not contain a provider variable (e.g., CMS Certification Number) that explicitly differentiates between these facility types

- **SNF** — this file is for services furnished by SNF providers. This file includes ICD-9 and ICD-10-CM diagnosis codes, dates of service, the organization provider number (the NPI), and beneficiary demographic information. CMS required MAO submission of Health Insurance Prospective Payment System (HIPPS) codes on FFS claims for SNFs, only for SNF encounters with “from” dates of July 1, 2015, or later

- **HH** — this is the HH services file, including the number of visits, type of visit (e.g., skilled nursing care, home health aides, physical therapy, speech therapy, occupational therapy, and medical social services), diagnosis (ICD-9 and

ICD-10-CM codes), date(s) of visit(s), and HH provider number (NPI). MA billing periods for HH services may differ from FFS, and researchers cannot construct episodes of care in the same manner. Further, CMS only required MAO submission of Health Insurance Prospective Payment System (HIPPS) codes for HH encounters with "from" dates of July 1, 2015, or later

- **OP** — this file is for outpatient services submitted by institutional providers (e.g., hospital outpatient departments, rural health clinics, Federally Qualified Health Centers, renal dialysis facilities, outpatient rehabilitation facilities, comprehensive outpatient rehabilitation facilities, and community mental health centers). This file includes ICD-9 and ICD-10-CM diagnosis and procedure codes, outpatient provider number (NPI), and beneficiary demographics. By using the associated revenue center records, researchers can obtain information regarding the CMS Healthcare Common Procedure Coding System (HCPCS) codes, dates of service, and revenue center codes

- **Hospice** — as mentioned previously, MA plans do not pay for hospice services. Therefore, there is no hospice file for MA. When an MA enrollee elects hospice, FFS Medicare pays hospice claims, and CMS reduces payments to the MAO for this enrollee to the monthly amount for MA supplemental benefits. The MA plan is still responsible for any supplemental benefits offered by the plan (e.g., dental, hearing, or reduced cost-sharing).[16] For example, suppose the MA plan offers reduced cost-sharing for some Part A or Part B services as a supplemental benefit. In that case, the plan must offer reduced cost-sharing to a hospice enrollee in certain circumstances (e.g., when a network provider furnishes the service for a diagnosis unrelated to the terminal condition and follows plan rules). Therefore, the CCW team recommends that researchers examine both encounter data records and FFS claims data for MA-enrolled beneficiaries receiving hospice services

Non-institutional providers. The Medicare non-institutional encounter data include services covered by the Part B benefit and consist largely of professional services and DME. The files for non-institutional providers include the following:

- **Professional** — this file is for practitioner/provider services (e.g., physicians, physician assistants, clinical social workers, nurse practitioners, independent clinical laboratories, ambulance providers, and free-standing ambulatory surgical centers). This file includes ICD-9 and ICD-10-CM diagnosis codes, dates of service, and non-institutional provider numbers (e.g., NPI). The line records document the applicable HCPCS codes for the visit

- **DME —** this file contains encounter data for DME suppliers. It includes ICD-9 and ICD-10-CM diagnosis codes, dates of service, and DME provider number (i.e., supplier NPI). The line records document the applicable HCPCS codes

Place of service on non-institutional encounters — non-institutional encounters cover a variety of settings. The place of service codes on the professional and DME base files (CLM_PLACE_OF_SRVC_CD, available 2016+) identifies the service's type of setting. Researchers can find the procedure or service in the line HCPCS codes (HCPCS_CD).

Medicare Prescription Drug Event files — there are no encounter data records for Medicare Part D drugs. All Part D prescription drug events (PDEs) data from all beneficiaries participating in the Part D program, regardless of whether

[16] MedPAC. Hospice Services Payment System. November 2021: Hospice services payment system – MedPAC (Accessed 5/31/2023)

the beneficiary elects MA or an FFS plan, are in the PDE file. Reference the CCW website for the file record layout and definitions. PDEs are available for all prescription fills covered as part of the Part D benefit from 2006 forward (the inception of the benefit), whereas encounter data are available from 2015 forward.

The Medicare Part B benefit covers some drugs, and they appear in the professional encounter data file rather than the Part D event file. Part B covered drugs are generally injectable or infused drugs administered in a medical setting (e.g., IV chemotherapy and some vaccines).

Chapter 3: Medicare Advantage Enrollment Data

Data for 100% of Medicare-enrolled beneficiaries is available from the CCW. Each month, the CCW downloads the CMS Common Medicare Environment (CME) database to create an annual enrollment RIF data file known as the Master Beneficiary Summary File (MBSF). Each annual file includes all beneficiaries documented as being alive for some part of the calendar year and enrolled in the Medicare program (Part A or Part B) for at least one month of the year.

Upon enrollment in Medicare, each beneficiary receives a health insurance claim (HIC) number.[17] HIC numbers appeared on Medicare claims and encounter data, and CMS traditionally used these to identify beneficiaries. Still, they are not ideal for research purposes because beneficiaries may have more than one HIC number during their lives due to events such as the death of a spouse or remarriage. The CCW creates a unique beneficiary identifier (known as the BENE_ID) using information from the CMS enrollment database, which contains various identifying information for each beneficiary, such as their HIC, sex, Social Security number (SSN), and date of birth. The BENE_ID uniquely identifies each beneficiary, and CCW uses it in data files in lieu of more sensitive identifiers such as the HIC or SSN. The BENE_ID allows linkage of an individual's data across data sources/years/types.

The unique CCW beneficiary identifier field is specific to the CCW and does not apply to any other identification system or data source. The CCW team encrypts this identifier before delivering the data files to researchers. In addition, the CCW team encrypts all data files delivered to researchers (reference "Encryption Information" in Chapter 6 for details). Each research request employs a different encryption key for the beneficiary identifier field and the data files.

Researchers can obtain the record layouts for all CCW data files from the CCW website, under the Data Dictionaries tab.

A. Demographic and Medicare Coverage Variables

The MBSF contains information on beneficiaries' demographic characteristics and details of their enrollment in Medicare. Examples of the types of information in the MBSF include:

- **Demographic** — age, race, sex, date of death
- **Geographic** — state, county, zip code
- **Enrollment** — the start date for Medicare coverage; how the beneficiary qualified for Medicare (both the original reason and the current reason, which can differ); and monthly information on eligibility (Part A, Part B, or both), enrollment in MA (aka Medicare Part C), and enrollment in Part D. Nearly 100% of beneficiaries enrolled in MA have coverage under both Part A and Part B. In contrast, about 88% of beneficiaries enrolled in FFS have coverage under both Part A and Part B

The base beneficiary summary file is also known as the MBSF Part A, B, C, and D segment. Beginning with the 2023 annual data file, there are some additional fields and adjustments in field names and algorithms for the MBSF —

[17] CMS began using a new Medicare Beneficiary Identifier (MBI) in place of the HIC, starting in 2018. Beneficiaries may have more than one MBI over time; CCW replaces this with the BENE_ID.

referred to as version 2 (V2) of the MBSF ABCD. Researchers can obtain MBSF codebook from the CCW website, under the Data Dictionaries tab.

B. Identifying Managed Care-Enrolled Beneficiaries

The MBSF includes Medicare enrollment and coverage information for all beneficiaries. There is a single row of data in the MBSF for each beneficiary enrolled in Medicare at any time during the year. Researchers can use the information provided in the MBSF to subset a study population. For example, limiting researchers' data to the subsample with MA enrollment is possible to allow for adequate surveillance (opportunity to observe encounter records). The MBSF indicates the type of Medicare coverage obtained.

Table 3 lists some key variables from the MBSF related to MA coverage.

Table 3. Variable names for Medicare enrollment variables with monthly values

Variables with monthly values	Description	SAS variable name the last 2 digits <MM> are sequential 01–12
HMO indicator*	Monthly indicator of whether the beneficiary enrolled in a managed care plan, currently referred to as MA plans	HMO_IND_<MM>
Part C Contract ID**	The unique number CMS assigns to each contract that a Part C plan has with CMS. The first character of the contract ID is a letter representing the type of plan (e.g., CMS assigns H to MA local contracts, cost contracts, PACE organizations, and demonstrations)	PTC_CNTRCT_ID_<MM>
Part C Plan Benefit Package ID	The unique number CMS assigns to identify a specific Part C plan benefit package (PBP) within a contract	PTC_PBP_ID_<MM>
Part C Segment Number†	CMS assigns the segment number to identify a segment or subdivision of a Part C plan benefit package within a contract	PTC_SGMT_ID_<MM>
Part C Plan Type Code	The type of MA plan for the beneficiary for the month (e.g., Local or Regional PPO, PFFS, PACE, MMP, etc.)	PTC_PLAN_TYPE_CD_<MM>

* The valid values for this field were different in the MBSF_ABCD than in the MBSF ABCD V2 refer to the MBSF_ABCD_V2 codebook for details

** In some instances, due to retroactivity (e.g., data lags in updating beneficiary contract changes) or other issues, the contract number on the encounter data record may be different than the contract of record for that beneficiary found on the Part C Contract ID.

† This field was new in MBSF ABCD V2.

To determine whether the beneficiary had Medicare FFS or MA during a particular month, the HMO indicator variable appears 12 times to represent each month of coverage (HMO_IND_01–12). Thus, the beneficiary has HMO coverage for any month where the HMO_IND_<MM> has a value other than "N", "0" or "4". A summary variable that counts the

months of MA coverage (BENE_HMO_CVRAGE_TOT_MONS) is also available in the MBSF (values = 0–12 months within the calendar year).

To understand the benefits package to which the beneficiary is subscribing, researchers must use the contract and Plan benefit package (PBP) number together; for a single Part C contract, there may be more than one PBP offered (e.g., PBPs may offer different levels of supplemental benefits and beneficiary cost-sharing). For a given Part C contract and PBP, the Part C segments, or market areas, may have different pricing.

A Technical Guidance paper, *Getting Started with CMS Medicare Administrative Research Files* on the CCW website, describes options for summarizing beneficiary Medicare coverage information.

Chapter 4: Using Medicare Encounter Data Files

The encounter data files are very large. It is important to determine whether researchers need to include all encounter records for the sample, and whether to include chart review records. For some analytic objectives, researchers may be able to use only records related to receipt of specific types of care, care for certain conditions, or care for particular beneficiaries. There may also be times when it is prudent to use only the encounter service records and not chart review records.

This section of the document provides guidance for working with the encounter data files to fulfill researcher's analytic objectives. The CCW team reminds investigators that the encounter files differ from FFS claims data files (or other CCW RIFs); therefore, even experienced Medicare data users should use caution when analyzing the encounter data.

A. Considerations for Selecting Encounter Records

The encounter data files may contain multiple records of the same service since they include both encounter records and chart review records. There may also be a chart review record where there is no other record of the service. Creating the appropriate analytic dataset can be the key to obtaining accurate information to address researchers study objectives. The following are some questions to consider when determining which encounter records are necessary:

1. **Should researchers include encounter data records only, or also chart review records**? For some purposes, encounter (service) records alone may suffice. However, chart review records are helpful if researchers want the most up-to-date list of diagnoses for a given beneficiary and service. More information regarding the content and utility of the chart review records appears in Chapter 2, Section A.2.

2. **How do I identify chart review records?** Researchers identify chart review records using the chart review switch variable (i.e., where CLM_CHRT_RVW_SW="Y"). As discussed in Chapter 2, MAOs and other entities can perform the following actions through a chart review record:

    - Add specific diagnoses to an original or replacement encounter data record or prior chart review record — identified when CLM_MDCL_REC is not equal to 8.
    - Delete specific diagnoses from a prior encounter data record or chart review record — identified when CLM_MDCL_REC = 8).
    - Replace a chart review record with another chart review record entirely — identified when CLM_ FREQ_CD = 7 and CLM_MDCL_REC is not equal to 8.

The example below (Table 4) presents a hypothetical encounter service and chart review record for a beneficiary. It helps demonstrate using the claim control number (CLM_CNTL_NUM) and the original claim control number (CLM_ORIG_CNTL_NUM) variables to link the chart review to the associated encounter service record. It also shows how the diagnosis codes on the service record and the chart review may differ.

Table 4. Example of encounter service record with linked chart review

BENE_ID	CLM_FROM_DT	CLM_THRU_DT	CLM_CNTL_NUM	CLM_ORIG_CNTL_NUM	ORG_NPI	CLM_FINL_ACTN_IND	CLM_CHRT_RVW_SW	CLM_MDCL_REC	ICD_DGNS_CD1	ICD_DGNS_CD2
Jones	12-Feb-15	12-Feb-15	1234567899999		1357986420	Y	null	null	I5023	null
Jones	12-Feb-15	12-Feb-15	1468975321344	1234567899999	1357986420	N	Y	null	N179	I5023

In this example, there is an encounter record and a chart review record for Mr. Jones. It is for the same service (the same BENE_ID, same dates, the same ORG_NPI). The encounter service record is in the first row (i.e., where CLM_FINL_ACTN_IND=”Y”) — and there is a null/missing CLM_ORIG_CNTL_NUM. The second record is a chart review (i.e., where CLM_CHRT_RVW_SW = “Y” and CLM_FINL_ACTN_IND=”N”). Researchers can link the chart review to the encounter services using the CLM_ORIG_CNTL_NUM. The diagnosis code (ICD_DGNS_CD1) on the encounter service record is I5023 (chronic systolic [congestive] heart failure). The chart review record also includes this diagnosis; however, it places it in the second diagnosis code position (ICD_DGNS_CD2) and adds a new diagnosis to the primary position (ICD_DGNS_CD1 = N179 – Acute kidney failure).

3. **How should I calculate unique service counts**? The encounter service records alone are sufficient to identify a unique number of services (e.g., where CLM_FINL_ACTN_IND="Y"); that is, for a given beneficiary, researchers are counting each unique occurrence of a particular service on a particular service date only once. For linked chart review records representing a chart review for services already captured by an encounter record, these records should be de-duplicated when counting unique *services*, although they may contain unique diagnosis codes. Unlinked chart reviews may or may not represent a service already captured by an encounter record.

Also note, on dates of submission on or after October 1, 2015, the IDR implemented a five-key edit to check inpatient encounter records for duplicates. Users may want to apply a similar logic (identified in Table 5) to check for duplicate inpatient encounters with submission dates before October 1, 2015.

Table 5. Variables used in five-key edit

Variable description	RIF field used
Beneficiary identification	BENE_ID
From date of service	CLM_FROM_DT
Through date of service	CLM_THRU_DT
Provider ID number	ORG_NPI
Type of bill	Defined as concatenation of (CLM_FAC_TYPE_CD, CLM_SRVC_CLSFCTN_TYPE_CD, CLM_FREQ_CD)

The number of duplicate encounter service records in the RIFs has declined since 2015. For example, in the IP file there were over 58,000 duplicate encounter service records (using the 5-key edit), compared to around 4,500 in 2016 and less than 1,000 in 2018. If researchers are working with 2015 data, they may wish to examine Appendix B: Additional Encounter Data Analytic Considerations, which includes some additional tips regarding duplicate records.

B. Limitations of Encounter Data

Unlike FFS claims records, CMS does not use MA encounter data as the basis for direct payments to providers since CMS pays MAOs, who in turn pay providers for treating MA enrolled beneficiaries. CMS does not pay MAOs for each encounter. Rather, CMS pays MAOs a capitated amount per beneficiary determined through a bidding process, regardless of how many services each beneficiary uses in a year. Therefore, service-level detail in MA encounter data may depend on a few factors, including the extent to which an MAO captures FFS-level detail in their interactions with providers.

CMS uses MA encounter data for risk adjustment purposes. The timeline for this business need creates a time lag between the provision of the services and the time the CCW team can deliver encounter RIFs to researchers. MAOs typically have 13 months after the end of a service year to submit encounter data to CMS that are eligible for risk adjustment payments. After the CMS risk adjustment deadline has passed for a given service year, the CCW receives annual encounter files from the CMS IDR — starting with 2015. Typically, the time lag between the risk adjustment deadline and encounter RIF creation means that encounter data included in the RIF were not available when CMS calculated risk scored from the encounter data. Similarly, MAOs updated some encounter records after the CCW created the RIFs and therefore does not include them in those files.

It is important to keep in mind that CMS does not use all encounter data for risk adjustment calculations. CMS only considers certain records with claim types related to inpatient, outpatient, and professional services for risk

adjustment purposes. Reference the CMS Health Plan Management System (HPMS) Memo on diagnosis filtering logic[18] for more details about which services CMS includes.

Given that the purpose and collection of encounter data differ from FFS claims data, the availability and consistency of claims-level variables may also differ from FFS data. For example, unique provider identifiers in the encounter data are only available at the NPI level. Any higher or lower level of provider affiliation (e.g., CMS Certification Number) is not available in the encounter RIFs. Researchers may supplement encounter NPI information with other variables in the encounter data (e.g., revenue center code, provider taxonomy codes). Data users may also link it to Medicare provider data (e.g., the CMS National Plan and Provider Enumeration System).

In addition, because MAO payment arrangements may differ from FFS, bundling of services and billing cycles may also differ from FFS. For example, FFS base HH claims on all services covered during episodes of care that can last up to 60 days. However, MAOs may pay HH providers based on shorter episodes of care (e.g., 30 days). Similarly, differences in payment structures and data collection by MAOs may contribute to MAOs populating some variables less consistently than FFS claims data. For example, encounter data is far more likely to contain a DRG value of '000' relative to FFS data, which may mean that some MAOs do not use a DRG for those services. To supplement '000' DRG values, CMS has created a derived DRG variable in the IP file (DRVD_DRG_CD) that applies 3M™ software to inpatient claims to create a DRG value similarly to how FFS data derives DRGs. Investigators should not use this derived variable for records for inpatient rehabilitation facilities or chart reviews.

Finally, researchers should be aware that CMS implemented Medicare-Medicaid Plans (MMPs, i.e., those participating in demonstrations under the Financial Alignment Initiative) on a phased-in basis beginning in October 2013, with most starting in 2014 or 2015. Due to the MMP start-up process, the CCW team urges caution in analyzing this subset of plans. A list of contract numbers associated with these plan types is available on the CMS website.[19]

C. Generalizing Encounter Data

While MA encounter data likely captures most services provided to MA enrollees, the totality of how MAOs collect and use MA encounter data means that encounter data may not represent the entire universe of MA services. CMS has been working with MAOs to ensure the accuracy and completeness of MA encounter data improve over time. The number of MA encounter records per enrollee submitted by MAOs likely continue to increase as: 1) MAOs become more familiar with encounter submission requirements, 2) encounter data become more transparent to the research community, and 3) risk adjustment payment becomes more reliant on encounter data. Encounter data users should understand the limitations of the data before generalizing findings to an MA plan, MAO, or the entire MA program.

[18] CMS Health Plan Management System (HPMS) memo on "Final Encounter Data Diagnosis Filtering Logic" - https://www.csscoperations.com/internet/cssc3.nsf/files/Final%20Industry%20Memo%20Medicare%20Filtering%20Logic%2012%2022%2015.pdf/$File/Final%20Industry%20Memo%20Medicare%20Filtering%20Logic%2012%2022%2015.pdf (Accessed 6/20/2025)

[19] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/Monthly-Enrollment-by-Contract (Accessed 6/20/2025)

MA encounter data does not necessarily reflect all Medicare-covered services obtained by MA enrollees. Other health insurance (e.g., employer; the US Department of Veterans Affairs) may cover some services. In addition, beneficiaries may have chosen FFS Medicare coverage for part of the year.

Chapter 5: Receiving CCW Data

The CCW team provides Medicare RIFs to academic researchers and government agencies to conduct approved research studies under a Data Use Agreement (DUA). The CCW Medicare data contain identifiable information and are subject to the Privacy Act and other Federal government rules and regulations (reference ResDAC website for information on requesting Medicare data). All who seek approval for access to the MA encounter data must ensure that data can reliably support their research proposal. Researchers should consider all guidance and data limitations in Chapter 4, Chapter 5, and Appendix B while writing study protocols for research requests.

External researchers have two options for accessing the data files — they may access them directly from the CCW within the Virtual Research Data Center (VRDC) or have their data shipped. For CCW VRDC users, the CCW team initiates their access upon receipt of the approved DUA and payment. For researchers who request that the CCW team ship their data, once the DUA is in place and CMS receives the payment for the files, the CCW team ships the data files to the requestor on either a USB external hard drive or a DVD. The CCW team packages these data files as encrypted self-decrypting archive (SDA) files (reference the *CCW Medicare Administrative Data User Guide* for additional information on encryption). The CCW team sends the decryption password to researchers electronically via email. When researchers receive the data package (via hard drive or DVD/CD), copy them from the shipping media to the local workspace. Researchers can decrypt some data shipped on a hard drive on that hard drive, depending on the size of the data files. Using the password provided in an email, follow the Decryption Instructions enclosed in the data package. Each SDA contains the data file(s), SAS® code, and a file transfer summary (.fts) file so that researchers can verify the data is accurate.

Chapter 6: Further Assistance with CCW Data

Researchers interested in working with CCW data should contact ResDAC. They offer free assistance to researchers using Medicare data for research. The ResDAC website provides links to descriptions of the CMS data available, request procedures, supporting documentation, such as record layouts and SAS input statements, workshops on how to use Medicare data, and other helpful resources. Visit the ResDAC website at http://www.resdac.org for additional information.

ResDAC is a CMS contractor and researchers should first submit requests to ResDAC for assistance in the application, obtaining, or using the CCW data. Researchers can reach ResDAC by phone at 1-888-973-7322, email at resdac@umn.edu, or online at http://www.resdac.org.

If a ResDAC technical advisor is not able to answer questions, the technical advisor directs the researcher to the appropriate person. If researchers require additional CMS data (data not available from the CCW) to meet research objectives, or the researcher has any questions about other data sources, they should first visit the ResDAC website.

The CCW Help Desk provides assistance between 8:00 am to 5:00 pm ET, Monday through Friday (excluding most federal holidays). Contact the CCW Help Desk at ccwhelp@ccwdata.org or 1-866-766-1915.

Appendix A: List of Acronyms and Abbreviations

Acronym	Definition
CCW	Chronic Conditions Warehouse
CME	CMS Common Medicare Environment
CMS	Centers for Medicare & Medicaid Services
DME	Durable Medical Equipment
DRG	Diagnosis Related Group
DUA	Data Use Agreement
ED	Emergency Department
EDS	Encounter Data System
ESRD	End-Stage Renal Disease
FFS	Fee-for-Service
HCPCS	Healthcare Common Procedure Coding System
HPMS	Health Plan Management System
HIC	Health Insurance Claim Number
HH	Home Health
HMO	Health Maintenance Organization
OP	Institutional Outpatient
ICD-9	International Statistical Classification of Diseases and Related Health Problems, 9th revision
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th revision
IDR	CMS Integrated Data Repository
IP	Inpatient
MA	Medicare Advantage
MAO	Medicare Advantage Organization
MA-PD	Medicare Advantage — Prescription Drug Plan
MBSF	Master Beneficiary Summary File
MDS	Minimum Data Set
MMA	Medicare Prescription Drug, Improvement, and Modernization Act
MMP	Medicare-Medicaid Plan
NPI	National Provider Identifier
OASIS	Outcome and Assessment Information Set
PACE	Programs of All-Inclusive Care for the Elderly
PBP	Plan Benefit Package
PDE	Prescription Drug Event
PFFS	Private Fee-for-Service Plans
PPO	Preferred provider organization
RAPS	Risk Adjustment Processing System
ResDAC	Research Data Analytic Center
RIF	Research Identifiable File
SAF	Standard Analytic File
SDA	Self-decrypting archive
SNF	Skilled nursing facility
SNP	Special Needs Plan

Acronym	Definition
SSN	Social Security number
VRDC	CCW Virtual Research Data Center

Appendix B: Additional Encounter Data Analytic Considerations

1. **How important is it that researchers remove all potentially duplicate encounter data records**? For some analytic purposes, the methodology using the five-part key edit (reference Table 5) is sufficient for removing duplicate records. However, certain analyses require additional analytic steps to remove other duplicate records:

    a. For analyses that require service line-level information, in addition to the 5-key edit described above, users should always include those service-level variables when de-duplicating records. It's recommended users include additional variables that align with users' specific analytic interests. These variables may include DGNS_CD, REV_CNTR, or HCPCS_CD.

    b. For institutional encounters, such as for inpatient, a single stay may generate multiple facility encounter records. For example, if a provider submits a claim for each day of the stay instead of one claim for the entire stay. In these cases, users may want to incorporate additional de-duplication steps (e.g., unique BENE_ID, CLM_ADMSN_DT, CLM_THRU_DT; unique BENE_ID, CLM_FROM_DT, BENE_DSCHRG_DT).

    c. Finally, some records have a "default" organizational National Provider Identifier (NPI); that is, the record does not use the actual NPI — the NPI= 1999999976, 1999999984, or 1999999992. In these instances, it is not possible to determine the specific provider. This may cause some difficulty when de-duping encounter records, as two records may appear identical except the NPIs do not match, or two records may appear identical, and both have default NPIs but are different providers.

2. **Identifying inpatient rehabilitation facilities, psychiatric facilities, and long-term care hospitals in the encounter IP file.** Researchers performing analyses that include IP admissions and readmissions may want to account for the different types of inpatient facilities in the encounter IP file. While the CMS Certification number is not available, encounter data users may consider using revenue center codes and provider taxonomy codes differentiate between inpatient facility types.

3. **Encounter services that may differ from FFS.** Some services and procedure codes may be different from what researchers typically use in FFS claims data. The following are some of the procedures that CMS rarely/never found in FFS claims. This is not a comprehensive list of HCPCS code differences, and each data user should decide how they want to use the data regarding these services for their individual purposes:

    a. HCPCS codes that end in "F" are typically a category II code that private health plans use for performance measurement

    b. HCPCS code that begins with:
    - S — supplemental services; codes private health plans or Medicaid state agencies typically use, and are not billable to Medicare FFS
    - T — typically used by Medicaid state agencies and are not billable to Medicare FFS
    - V — vision or hearing service
    - E — durable medical equipment
    - K — DME temporary codes
    - L — orthotic procedures and devices
    - H — drug and alcohol rehabilitation
    - D — dental service

    c. HCPCS codes for:
    - ophthalmology determination of refractive state (HCPCS code 92015)
    - periodic comprehensive preventive exam (HCPCS codes 99391-99397)

- unlisted evaluation and management (HCPCS code 99499)

In addition, MAOs may include some professional services that Medicare FFS typically doesn't allow. These services include:

- Medical homes and the Multi-payer Advanced Primary Care Practice demonstration (HCPCS codes G9148-G9153)
- Medicare Coordinated Care demonstration (HCPCS codes G9005-G9010)
- Pharmacy supplying fee for immunosuppressive, oral anti-cancer, and oral anti-emetic drugs (HCPCS codes Q0511- Q0512)

4. **Duplicate lines in the inpatient or outpatient line files for 2018 and later years.** For a small number of records, the duplicate lines are those with identical values in all fields except for the CCW derived LINE_NUM. Researchers can identify these duplicate lines using the following code example:

```
proc sql;
create table duplicate as
select enc_join_key, LINE_NUM_ORIG, count (LINE_NUM_ORIG) as duplicate
from enrfpl18.ip_revenue_enc

/*if using the outpatient file or the 2019 file, change this file path and
name as appropriate*/

group by enc_join_key, line_num_orig
having calculated duplicate > 1;
quit;
```