

Model Output Report & Data File User Guide

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Change History

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Introduction

The purpose of this user guide is to provide Medicare Advantage (MA) and other Organizations¹ a comprehensive reference manual for using the Risk Adjustment Model Output Report (MOR) that is provided by the Centers for Medicare & Medicaid Services (CMS).

The MOR is a monthly report that enables MA and other Organizations to verify the hierarchical condition categories (HCCs) that are used to calculate risk scores for each beneficiary. The MOR also provides demographic variables for each beneficiary. The payment HCCs together with the demographic variables are used to calculate risk scores for each beneficiary enrolled in Medicare Advantage (MA) each time the risk adjustment models are run. While the HCCs and demographic information for each beneficiary do not change between model runs, each monthly report contains information for each MAO's enrollees for that month.

The MOR comprises two separate reports -- a PDF file and a flat file data version. In this user guide, we will refer to the MOR generally unless we specify one of these reports.

Also, in this user guide, we provide information on accessing the MOR file layouts, examples of records in a MOR, and an explanation of how to use the report to verify the payment HCCs that are used to calculate each beneficiary's Part C and/or Part D risk score. The record types used in the MOR, from Payment Year (PY) 2006 to the present, and a mapping of these record types to the CMS-HCC models & the RxHCC model² can be found in Appendix A, Table 3: Record Type Information.

¹ Programs of All-Inclusive Care for the Elderly (PACE), Cost Plans, Demonstration Projects, and Third Party Submitters. In addition to collecting service-level risk adjustment data (i.e., encounter data) from MAOs, CMS collects service-level risk adjustment data for each item or service delivered to enrollees of section 1876 Cost Health Maintenance Organization and Competitive Medical Plans (HMOs/CMPs), Program of All-inclusive Care for the Elderly (PACE) organizations, and Medicare-Medicaid Plans (MMPs). We refer to all organizations that submit encounter data as MA and other Organizations for the remainder of this document.

² The Advance Notice and Announcement, which are the main documents that outline payment policy for particular payment years, includes information regarding updates to the risk adjustment models and are available here: <http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Announcements-and-Documents.html>.

Background

Risk adjustment enables CMS to pay MA and other Organizations for the risk of MA beneficiaries they enroll based on the health status and demographic characteristics of their enrollees.³ A risk score represents a beneficiary's expected medical costs relative to the average expected cost of beneficiaries entitled to Medicare Fee-For-Service (FFS) and enrolled in Part A and Part B.

The use of risk adjustment for MA was first required by the Balanced Budget Act (BBA) in 1997. CMS shifted from the original risk adjustment methodology, which considered diagnoses from inpatient hospital stays only, to the CMS-HCC risk adjustment model, in 2004 in response to the Benefits Improvement and Protection Act of 2000 (BIPA) that required the implementation of a risk adjustment model using not only diagnoses from inpatient hospital stays, but also from ambulatory settings. There have been numerous modifications and improvements to the CMS-HCC model since it was first implemented.

Risk scores for calculating payments to managed-care plans for healthcare (Medicare Part C) are based on the CMS Hierarchical Condition Category (HCC) risk model, and those for calculating payments for either a stand-alone drug benefit or one that is part of a managed-care plan (Medicare Part D) are computed using the Prescription Drug Hierarchical Condition Category (RxHCC) model.

The CMS-HCC is a prospective model, meaning diagnoses submitted in one year are used to predict costs in the following year. The model includes demographic variables and health condition factors, which are based on diagnoses, to predict costs. There is a separate set of coefficients for existing beneficiaries in the community, for existing beneficiaries in long-term care institutions, and for new enrollees (beneficiaries who are new to Medicare).

For PY 2020, in order to meet the requirements of the 21st Century Cures Act,⁴ CMS finalized a revised model,⁵ which adds variables that take into account the number of conditions a beneficiary may have in the risk adjustment model ("count variables") and HCCs for pressure ulcer and dementia.

³ Section 1853 of the Social Security Act requires that payments to plans are risk adjusted using health status and other factors.

⁴ Twenty First Century Cures Act.

⁵ See the Advance Notice of Methodological Changes for Calendar Year (CY) 2020 for Medicare Advantage for information on the Alternative Payment Condition Count (APCC) model, also referred to as the "2020 model."

This model also includes conditions for mental health, substance use disorder, and chronic kidney disease, first included in the CMS-HCC model for PY 2019 in response to the 21st Century Cures Act.

Diagnoses Codes and Hierarchical Condition Categories

Diagnoses are submitted to CMS in two different data formats:⁶ (1) through the abbreviated Risk Adjustment Payment System (RAPS) data format and (2) through the X12 837 5010 format used to collect Encounter Data.

All diagnosis codes are mapped to condition categories (CCs). Each CC contains clinically related groups of diagnoses, such as colon cancer and rectal cancer, which have similar clinical characteristics, severities, and cost implications. Hierarchies are applied among related CCs, so that only the most severe manifestation of the condition is reflected in a beneficiary's risk score.

Not all HCCs are included in the model and used in payment. The decision to include a HCC in the model is based on the HCC's ability to predict costs

for Medicare Parts A and B benefits. Each payment HCC has an estimated relative factor, and this relative factor is then included in the risk score calculation.

HCCs, demographic variables, interaction terms, and the associated relative factors to be used in adjusting annual capitation rates are published in the annual Rate Announcement whenever a new model is finalized. If a risk adjustment model update results in changes to the HCCs in a model, there will be an associated update to the MOR.

A HCC will be incorporated into the beneficiaries' risk score during a model run and reflected in the corresponding MOR when the following conditions are met: (1) a diagnosis that maps to the HCC is submitted and is accepted by the deadline for the particular model run, (2) the diagnosis is not deleted prior to the model run, and (3) the beneficiary does not have another HCC within a given condition category hierarchy that is of higher severity and results in the lower severity HCC being excluded from the risk score.

⁶ Under 42 C.F.R. § 422.310, Medicare Advantage Organizations (MAOs) are required to submit Encounter Data for each item and service provided to an MA enrollee. As required under § 422.310(b): Each MAO organization must submit to CMS (in accordance with CMS instructions) the data necessary to characterize the context and purposes of each item and service provided to a Medicare enrollee by a provider, supplier, physician, or other practitioner. Additionally, under § 422.310(d): MAO organizations must submit data that conform to CMS' requirements for data equivalent to Medicare fee-for-service data, when appropriate, and to all relevant national standards.

The Model Output Report (MOR)

Overview

The MOR files are distributed to MA and other Organizations on a monthly basis through the Medicare Advantage Prescription Drug (MARx) mailboxes, are available on the MARx User Interface (UI), and the data for each beneficiary are updated each time risk adjustment model runs occur. The risk score model runs typically occur three times a year for Initial, Mid-Year, and Final payment. Information regarding the timing of model runs is released through the Health Plan Management System (HPMS) memo.

Each MOR is a series of record types; one record type is created for each CMS-HCC, Rx-HCC, PACE, and ESRD model version because each model has different diagnosis-to-HCC mappings. The **record type** data field on the MOR indicates the model version and denotes the data source⁷ of the diagnosis code data (i.e., RAPS, Encounter Data). The models and the corresponding record types for each model

year are listed in the Plan Communication User Guide (PCUG) for Medicare Advantage Prescription Drug Plans.⁸

Frequency

As noted above, a MOR is created each time a model is run (Initial, Mid-Year, and Final). The monthly MORs are based on the most recent model run; therefore, between model runs, there are no changes in the monthly MOR with the exception of beneficiary enrollment updates. Specifically, the monthly MORs released during December through May are for payment months January through June and are based on the Initial model run data. The monthly MORs released during June through November are for payment months July through December and are based on the Mid-Year model run data.

A beneficiary can change MAO contracts in any month during the payment year. For the monthly MORs, the latest MAO contract the beneficiary is enrolled in will receive the demographic and HCC information. However, for the final payment MOR all MAO contracts the beneficiary enrolled in during the payment year will each receive

⁷ From payment year 2003 through payment year 2015, the MORs contained data based on RAPS data submissions only. In payment year 2016, these files began accommodating the Encounter Data diagnoses submitted by MAO and other organizations as well. For PY2022 and onward, the MORs will contain data based on Encounter Data and FFS data. The PACE MORs will continue to use data from RAPS, FFS, and Encounter Data.

⁸ The Plan Communications User Guide is posted at https://www.cms.gov/Research-Statistics-Data-and-Systems/CMS-information-technology/mapdhelpdesk/Plan_Communications_User_Guide.

the beneficiary's demographic and HCC information. Please note that deceased beneficiaries are dropped from the subsequent monthly MORs for the payment year. For Final MORs, if the beneficiary was alive during any part of the payment year, then a MOR

record will be generated for the MAO contract the beneficiary was enrolled in during the payment year. Please reference Table 1 below with payment year 2020 as an example.

Table 1: Examples of the Timing of Model Run, Payment Month, MOR Distribution

Model Run (Payment Years)	Date of Service Years	Months Distributed	Payment Months
2020 Initial	Service Through Dates 07/01/2018 to 06/30/2019	December 2019 through May 2020	January 2020 through June 2020
2020 Mid-Year	Service Through Dates 01/01/2019 to 12/31/2019	June 2020 through November 2020	July 2020 through December 2020
2020 ⁹ Final	Service Through Dates 01/01/2019 to 12/31/2019	May 2021	June 2021

⁹ This references the Payment Year 2020 Interim Final Model Run that was performed in February 2021. CMS also performed a Payment Year 2020 Final Update Model Run in August 2021. Information on upcoming Risk Adjustment Model runs are referenced in HPMS Memos. For example, "Deadline for Submitting Risk Adjustment Data for Use in Risk Score Calculation Runs for Payment Years 2020, 2021, 2022, and 2023" HPMS memo dated January 15th, 2021.

Accessing the MOR files

CMS distributes the MOR files to MA and other Organizations through the Enterprise File Transfer (EFT) mailboxes and the MARx UI. The MOR files are distributed through the MARx EFT mailboxes and are available for two weeks,

after which MAOs may order archived reports through the MARx UI. (Please see Plan Communications User Guide for more information on establishing connectivity.)



Table 2 outlines the file names of the reports by transfer protocol. The naming conventions include the following information:

All connectivity methods:

- xxxxx is the contract number the MOR represents
- HCCMODR indicates the PDF report format of the MOR
- HCCMODD indicates the data file version of the MOR

EFT Mailbox:

- zzzzzzzz is the Plan sponsor-provided high-level qualifiers for Connect:Direct Mainframe users
- yyymm is the two-digit year, two-digit month of the payment year and month
- Thhmsst is the timestamp, representing the time of file creation

MARx UI:

- yyyymm is the four-digit year, two-digit month of the payment year and month

Table 2: MOR Data File, File Naming Conventions¹⁰

Data Transfer Protocol /Connecting to CMS	File Names of Reports
EFT Mailbox	<p>Gentran Mailbox/TIBCO MFT Internet Server P.Rxxxxx.HCCMODR.Dyyymm01.Thhmsst P.Rxxxxx.HCCMODD.Dyyymm01.Thhmsst</p> <p>Connect:Direct (Mainframe) zzzzzzzz.Rxxxxx.HCCMODR.Dyyymm01.Thhmsst zzzzzzzz.Rxxxxx.HCCMODD.Dyyymm01.Thhmsst</p> <p>Connect:Direct (Non-Mainframe) [directory]Rxxxxx.HCCMODR.Dyyymm01.Thhmsst [directory]Rxxxxx.HCCMODD.Dyyymm01.Thhmsst</p>
MARx UI	P#MMA.@BDG5050.PLNxxxxx.Ryyyymm.HCCMODR P#MMA.@BDG5050.PLNxxxxx.Ryyyymm.HCCMODD

¹⁰ EFT mailbox and MARxUI are supported by the MAPD Help Desk: (mapdhelp@cms.hhs.gov).

MA and other Organizations can also order archived MOR files from the MARx UI following these steps:

1. Go to the CMS Enterprise Portal (portal.cms.gov/portal/)
2. Go to the “Reports” menu

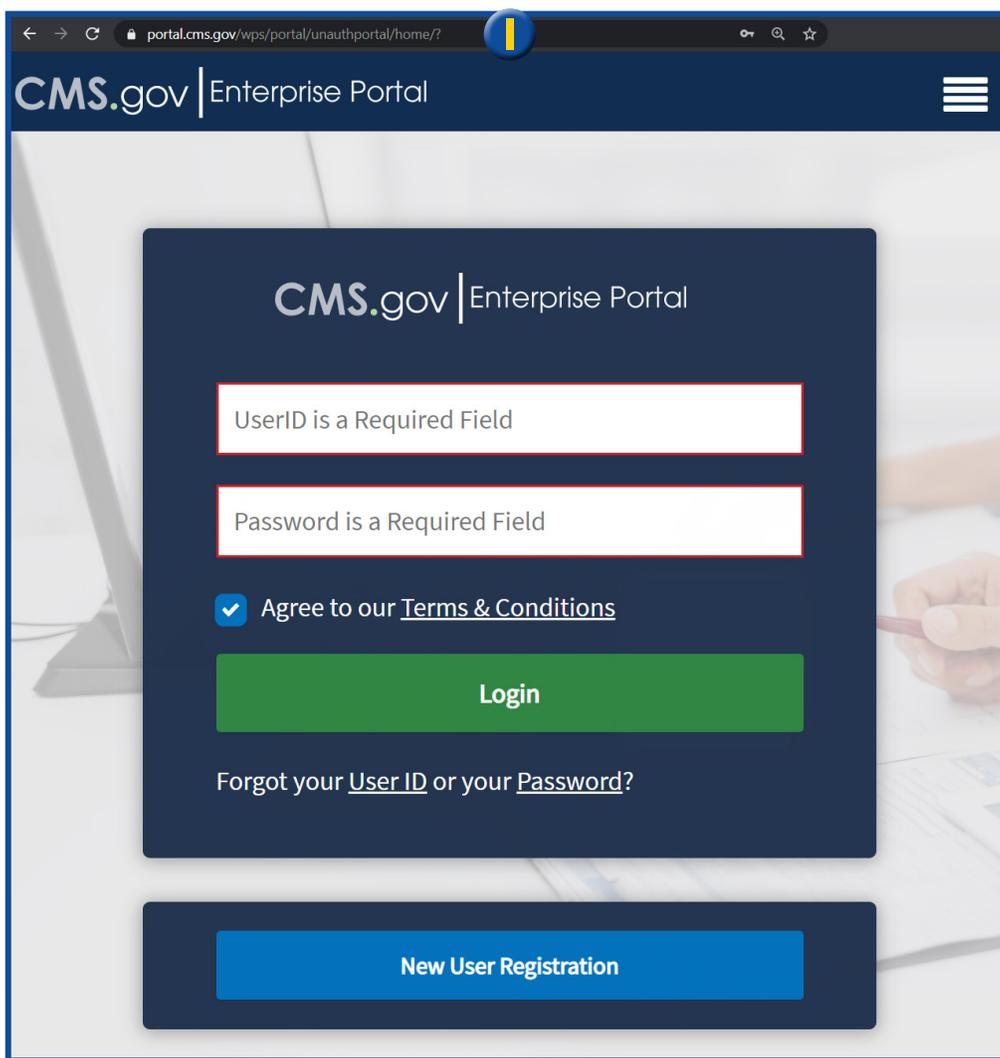
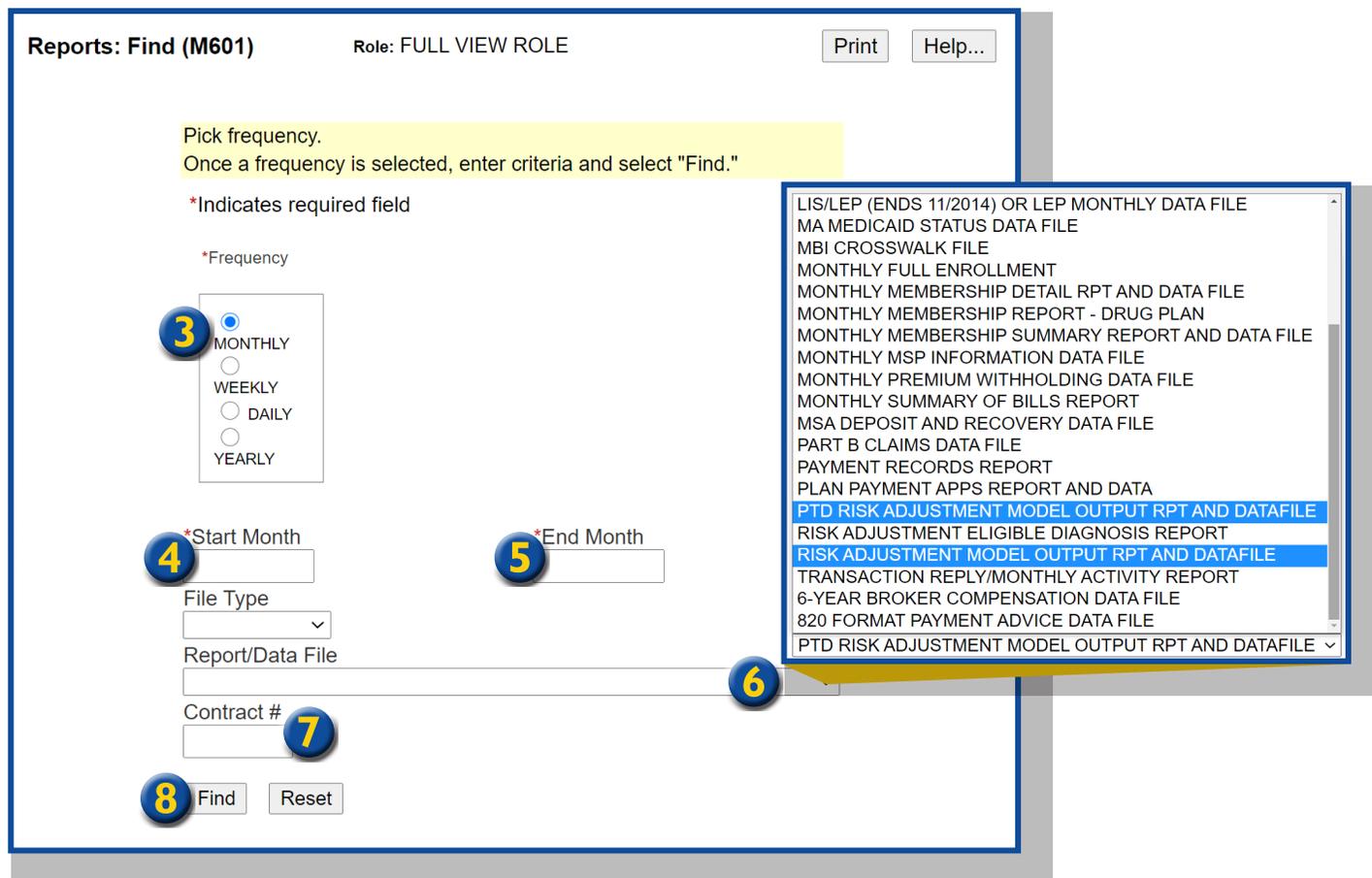


Figure 1: Accessing MOR Files - MARx UI Screenshot



3. Select "Monthly" frequency
4. Select "Start Month/Year"
(The month should be the month the report is distributed. For example, 04/2020 would return the MOR report distributed in April.)
5. Select "End Month/Year"
6. On the "Report/Data File" drop down select "Risk Adjustment Model Output RPT and Data File" for Part C MORs or "PTD Risk Adjustment Model Output RPT and Datafile" for Part D MORs.

7. Add your "Contract ID"
8. Select "Find"
 - The reports will be resent to your MARx EFT mailbox and be available by the next day.
 - NOTE: Do not specify file type.
 - Although you may request multiple months of reports using a different Start Month and End Month, only one report may be ordered at a time.

Format of MOR

The MOR file that is delivered as a PDF presents the beneficiary and HCC information in a format intended to be easily read by a reviewer. The MOR data file is a flat file. The Part C MOR Record layout is 200-bytes in length and the Part D MOR Record layout varies from 168-bytes to 180-bytes in length. The MOR data file format is machine-readable.

Reading a MOR file and Description of Data Fields

As described above, the MORs contain information on the HCCs that are used to calculate Part C risk scores for each beneficiary and are produced with the Initial, Mid-Year, and Final model runs.

MORs are also produced for the Part D program and display the Prescription Drug Hierarchical Condition Categories (RxHCCs) which are used to calculate Part D risk scores for each beneficiary.

Below are several examples of a MOR PDF and the corresponding MOR data file. Two figures with descriptions are presented for each example. The first figure shows the MOR PDF and the sec-

ond figure shows the corresponding MOR data file. Both figures contain the same data. In each figure, there is a line for each beneficiary, even if the beneficiary did not have any diagnoses that mapped to payment HCCs.

Readers may want to refer to the PCUG record layouts¹¹ when reviewing the examples presented in this user guide.

Example of MOR PDF and MOR Data File

Examples 1–3 represent two Record Types produced for the 2019 initial model run for the CMS-HCC models for non-PACE and non-ESRD beneficiaries. The two different record types indicate the data source: Record type D shows the HCCs in the 2017 model assigned to each beneficiary using RAPS data and Record type I shows the HCCs in the 2019 model assigned to each beneficiary using Encounter Data for the non-PACE, non-ESRD beneficiaries.

Example 1 is illustrated in **Figures 2** and **3**, which depict a de-identified MOR PDF. These data fields are listed based on the corresponding fields on the current MOR record layout in the PCUG for Record Types 'D' and 'I.'

¹¹ The Plan Communications User Guide is posted at https://www.cms.gov/Research-Statistics-Data-and-Systems/CMS-Information-Technology/mapdhelppdesk/Plan_Communications_User_Guide.

In the top left corner of **Figure 2**, there are three items displayed: **(1)** the Contract Number, **(2)** the Run Date, and **(3)** the Payment Month and Year. The contract number in this example is reported below the heading “H####.” This corresponds to the contract number under the Risk Adjustment Model Output Report heading. The run date, April 7, 2019 (20190407 in the CCYYM-MDD format), is the date the report was generated. The payment month shows as May 2019 (201905 in the YYYYMM format), which indicates the month the payment will be made using the data shown in this MOR.

The next group of descriptions are related to selected detail level data fields also found in **Figure 2** below.

The **(4)** beneficiary ID, **(5)** beneficiary Last Name, **(6)** beneficiary First Name, **(7)** beneficiary Initial, are displayed under the Payment Month line.

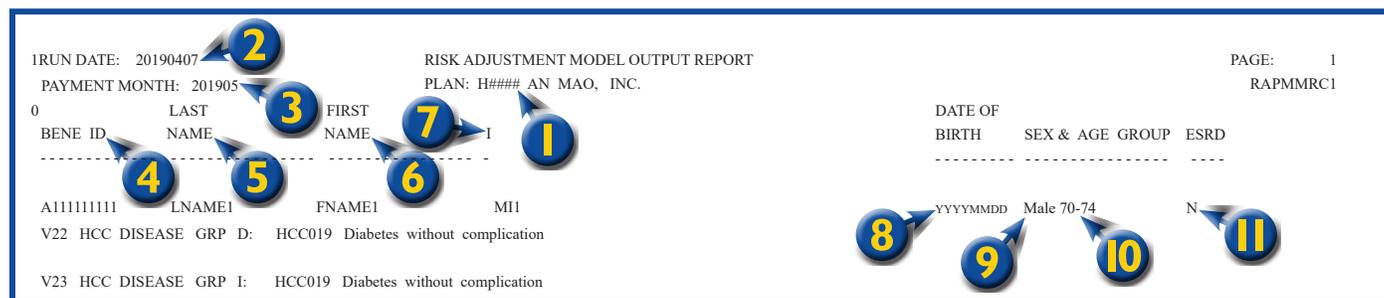
The beneficiary ID in **Figure 2** is listed after the beneficiary heading as “A111111111,” followed by the beneficiary Last Name (LNAME1), beneficiary First Name (FNAME1), and beneficiary Middle Initial Name (MI1).

On the right-hand side of the report in **Figure 2**, there are four more data fields being displayed. These data fields are **(8)** Date of Birth which is listed in the format of YYYYMMDD, **(9)** Sex, **(10)** Age Group, and the **(11)** ESRD Indicator.^{12, 13}

While the name and DOB have been de-identified for this example, we can see that this particular beneficiary is a Male in Age group 70–74. The beneficiary also does not qualify for ESRD as indicated by the “N” under the column heading “ESRD.”

The source of the diagnosis information as shown by the record type are indicated along with the model version

Figure 2: MOR PDF - Example 1 - Record Types D & I



¹² The beneficiary’s ESRD status as of the model run. Also indicates if the beneficiary was processed by the ESRD models in the model run.
¹³ The ESRD Indicator is only populated on the MOR report (PDF) for V22 (record type ‘D’) and V23 (record type ‘I’) and not populated on the MOR data files. In the V21 model, the ESRD status of a beneficiary is indicated by the record type and thus, there is no need for an ESRD Indicator on the MOR report.

Appendix A: Record Types

Table 3: Record Type Information

MOR Record Type	Model Version (Part C or Part D and Version)	Payment Years	Applicable Data Source
B	Part C V21 ESRD PACE	2012 – 2021	RAPS, FFS, and Encounter Data
E	Part C V21 ESRD	2012 – 2021	RAPS and FFS
G	Part C V21 ESRD	2012 – 2021	Encounter Data and FFS
C	Part C V22 Non-PACE and Non-ESRD	2014 – 2016	RAPS and FFS
F	Part C V22 Non-PACE and Non-ESRD	2014 – 2016	Encounter Data and FFS
D	Part C V22 Non-PACE and Non-ESRD	2017 – 2021	RAPS and FFS
I	Part C V23 Non-PACE and Non-ESRD	2019	Encounter Data and FFS
J¹⁶	Part C V24 Non-PACE and Non-ESRD	2020 – 2021	Encounter Data and FFS
K	Part C V22 PACE Non-ESRD	2020 – 2021	RAPS, FFS, And Encounter Data
2	Part D V05	2016 – 2021	RAPS And FFS
4	Part D V05	2016 – 2021	Encounter Data and FFS
5	Part D V05 PACE	2016 – 2021	RAPS, FFS, And Encounter Data

¹⁶ Record type H was replaced with record type J under the V24 (2020) Part C model. For more information check HPMS "Updates to Payment Years (PY) 2017 and 2018 Model Output Report (MOR) dated March 12, 2018.