Department of Health and Human Services
Office of Inspector General
Office of Audit Services

May 2026 | A-02-23-01020

CMS Potentially Overpaid Medicare Advantage Organizations $462 Million Based on Certain Unsupported Acute Stroke Diagnosis Codes

REPORT HIGHLIGHTS

May 2026 | A-02-23-01020

CMS Potentially Overpaid Medicare Advantage Organizations $462 Million Based on Certain Unsupported Acute Stroke Diagnosis Codes

Why OIG Did This Audit

- Under the Medicare Advantage (MA) program, CMS makes monthly payments to MA organizations according to a system of risk adjustment that depends on the demographic characteristics and health status of each enrollee. Accordingly, MA organizations are paid more for providing benefits to enrollees whose diagnoses are associated with more intensive use of health care resources relative to healthier enrollees, who would be expected to require fewer health care resources.
- To determine the health status of enrollees, CMS relies on MA organizations to collect diagnosis codes from their providers and submit these codes to CMS. Some diagnoses are at higher risk for miscoding, which may result in overpayments from CMS.

Previous OIG audits of specific MA organizations have identified acute stroke diagnosis codes submitted on physician data records without an acute stroke diagnosis on an inpatient or outpatient hospital data record during the same service year as a high-risk area for overpayment. This audit focused on this high-risk area across multiple MA organizations to examine whether MA organizations' submissions of these diagnosis codes to CMS complied with Federal requirements. We reviewed MA organizations' submissions for 97 individuals enrolled in a coordinated care or private fee-for-service MA plan (sampled enrollees).

What OIG Found

- For all 97 sampled enrollees, the high-risk acute stroke diagnosis codes that MA organizations submitted to CMS were not supported by the medical records associated with the physician data records containing the diagnoses.
- On the basis of our sample results, we estimated that CMS made $462 million in potential net overpayments to MA organizations for 2021.

For 773,999 MA enrollees, MA organizations submitted an acute stroke diagnosis code to CMS for the 2020 service year

Our audit included 240,401 MA enrollees that were at high risk for having an incorrectly submitted acute stroke diagnosis code

All 97 sampled enrollees' high-risk acute stroke diagnosis codes were not supported by the medical records.

What OIG Recommends

We made one recommendation to CMS to implement a procedure to prevent overpayments to MA organizations when acute stroke diagnosis codes are submitted by MA organizations on a physician data record and the enrollee does not have an acute stroke diagnosis on an inpatient or outpatient hospital data record during the same service year, which could have resulted in cost savings of $462 million. The full recommendation is in the report.

CMS did not specify concurrence or nonconcurrence with our recommendation.

TABLE OF CONTENTS

INTRODUCTION

WHY WE DID THIS AUDIT

Under the Medicare Advantage (MA) program, the Centers for Medicare & Medicaid Services (CMS) makes monthly payments to MA organizations based in part on the characteristics of the enrollees being covered. Using a system of risk adjustment, CMS pays MA organizations the anticipated cost of providing Medicare benefits to a given enrollee, depending on such risk factors as their demographic characteristics (e.g., age and gender) and health status. Accordingly, MA organizations are paid more for providing benefits to enrollees with diagnoses associated with more intensive use of health care resources relative to healthier enrollees, who would be expected to require fewer health care resources. To determine the health status of enrollees, CMS relies on MA organizations to collect diagnosis codes from their providers and submit these codes to CMS.[1]

This audit is part of a series of audits of high-risk diagnosis codes submitted by MA organizations to CMS for use in CMS's risk adjustment program. Prior MA compliance audits have each focused on a specific MA organization and identified overpayments for diagnoses that we considered to be at high risk for miscoding, including certain acute stroke diagnosis codes.[2] This audit covered instances across MA organizations nationwide that submitted to CMS acute stroke diagnosis codes identified on physician data records but the enrollees did not have an acute stroke diagnosis code identified on an inpatient or outpatient hospital data record also submitted to CMS during service year 2020.[3, 4]

OBJECTIVE

Our objective was to determine whether MA organizations' submissions of certain acute stroke diagnosis codes to CMS for use in CMS's risk adjustment program complied with Federal requirements.

---

[1] Providers code diagnoses using the *International Classification of Diseases (ICD), Clinical Modification, Official Guidelines for Coding and Reporting*. The ICD is a coding system used by physicians and other health care providers to classify and code all diagnoses, symptoms, and procedures.

[2] MA compliance audit reports issued by the Office of Inspector General (OIG) are published on the OIG website.

[3] The 2021 payment year data were the most recent data available at the start of the audit.

[4] For purposes of this report, we use the term "data record" to indicate an MA organization's submission of diagnosis codes to CMS. We classified the data record by encounter type (e.g., physician, outpatient hospital, or inpatient hospital data record).

BACKGROUND

Medicare Advantage Program

The MA program offers people eligible for Medicare managed care options by allowing them to enroll in private health care plans rather than having their care covered through Medicare's traditional fee-for-service program.[5] Individuals who enroll in these plans are known as enrollees. To provide benefits to enrollees, CMS contracts with MA organizations, which in turn contract with providers, including hospitals and physicians.[6]

Under the MA program, CMS makes advance payments each month to MA organizations for the expected costs of providing health care coverage to enrollees. These payments are not adjusted to reflect the actual costs that the organizations incurred for providing benefits and services. Thus, MA organizations will either realize profits if their actual costs of providing coverage are less than the CMS payments or incur losses if their costs exceed the CMS payments. For 2024, CMS paid approximately 760 MA organizations $494 billion to provide benefits to Medicare enrollees, which represented 44 percent of all Medicare payments for that year.

Risk Adjustment Program

Federal requirements mandate that payments to MA organizations be based on the anticipated cost of providing Medicare benefits to a given enrollee and, in doing so, also account for variations in the demographic characteristics and health status of each enrollee.[7]

CMS uses two principal components to calculate the risk-adjusted payment that it will make to an MA organization for an enrollee: a base rate that CMS sets using bid amounts received from the MA organization and the risk score for that enrollee. These are described as follows:

- *Base rate*: Before the start of each year, each MA organization submits bids to CMS that reflect the MA organization's estimate of the monthly revenue required to cover an enrollee with an average risk profile.[8] CMS compares each bid to a specific benchmark

[5] The Balanced Budget Act of 1997, P.L. No. 105-33, as modified by section 201 of the Medicare Prescription Drug, Improvement, and Modernization Act, P.L. No. 108-173, established the MA program.

[6] An MA organization may offer health care benefits under a coordinated care plan, a private fee-for-service plan, or a medical savings account plan. We limited this audit to MA enrollees who were enrolled in a coordinated care plan or a private fee-for service plan.

[7] The Social Security Act (the Act) §§ 1853(a)(1)(C) and (a)(3); 42 CFR § 422.308(c).

[8] The Act § 1854(a)(6); 42 CFR § 422.254 *et seq*.

amount for each geographic area to determine the base rate (standardized bid and premium or rebate, if any) that an MA organization is paid for each of its enrollees.[9]

- *Risk score*: A risk score is a relative measure that reflects the expected costs for each enrollee compared with the expected costs for an average enrollee. CMS calculates risk scores based on an enrollee's health status (discussed below) and demographic characteristics (such as the enrollee's age and gender). This process results in an individualized risk score for each enrollee, which CMS calculates annually.

CMS uses the CMS Hierarchical Condition Categories (CMS-HCC) model to adjust payments based on the demographic characteristics and health status of an enrollee. Specifically, CMS maps diagnosis codes, on the basis of similar clinical characteristics and severity and cost implications, into Hierarchical Condition Categories (HCCs).[10] CMS selects certain HCCs to include in the CMS-HCC model used for the risk adjustment program. Each HCC in the CMS-HCC model has a factor (which is a numerical value) assigned to it for use in calculating an enrollee's risk scores.

To determine an enrollee's health status for purposes of calculating the risk score, CMS uses diagnoses that the enrollee receives from acceptable data sources, including certain professional and hospital services. MA organizations collect the diagnosis codes from providers and then submit these codes on data records to CMS based on CMS guidance, which includes a requirement for diagnoses to be documented in medical records.

As a part of the risk adjustment program, CMS consolidates certain HCCs into related-disease groups. Within each of these groups, CMS assigns an HCC for only the most severe manifestation of a disease in a related-disease group. Thus, if MA organizations submit diagnosis codes for an enrollee that map to more than one of the HCCs in a related-disease group, only the most severe HCC will be used in determining the enrollee's risk score.

For enrollees who have certain combinations of HCCs or multiple HCCs, CMS assigns a separate factor that further increases the risk score. CMS refers to these combinations as disease interactions and HCC count variables. For example, if MA organizations submit diagnosis codes for an enrollee that map to the HCCs for lung cancer and immune disorders, CMS assigns a separate factor for this disease interaction. By doing so, CMS increases the enrollee's risk score for each of the two HCC factors and by an additional factor for the disease interaction.

[9] CMS's bid-benchmark comparison determines whether the MA organization must offer supplemental benefits or must charge a basic enrollee premium for the benefits.

[10] CMS transitioned from one CMS-HCC model to another during our audit period. As part of this transition, for payment year 2021, CMS calculated risk scores based on both models. CMS refers to these models as the Version 22 model and the Version 24 model, each of which has unique HCCs. Accordingly, a diagnosis code can map to either a Version 22 model HCC, a Version 24 model HCC, or to both models.

The risk adjustment program is prospective. Specifically, CMS uses the diagnosis codes that the enrollee received for one calendar year (known as the service year) to determine HCCs and calculate risk scores for the following calendar year (known as the payment year). Thus, an enrollee's risk score does not change for the year in which a diagnosis is made. Instead, the risk score changes for the entirety of the year after the diagnosis has been made. Further, the risk score calculation is an additive process: as HCC factors (and, when applicable, disease interaction factors) accumulate, an enrollee's risk score increases, and the monthly risk-adjusted payment to the MA organization also increases. In this way, the risk adjustment program compensates MA organizations for the additional risk of providing coverage to enrollees expected to require more health care resources.

MA organizations can submit diagnosis codes to CMS up until the final risk adjustment data submission deadline—January 31 of the year following the payment year—for use in calculating the enrollee's risk score. When an MA organization identifies an incorrect diagnosis code, it is required to submit the diagnosis code for deletion to CMS, regardless of whether the MA organization identifies the incorrect diagnosis code before or after the final risk adjustment data submission deadline date.

CMS multiplies the risk scores by the MA organization's bid to calculate the total monthly Medicare payment that an MA organization receives for each enrollee. Thus, if the factors used to determine an enrollee's risk score are incorrect, CMS will make an improper payment to an MA organization. Specifically, if medical records do not support the diagnosis codes that an MA organization submitted to CMS, the HCCs are not validated, which causes overstated enrollee risk scores and overpayments from CMS.[11] Conversely, if medical records support the diagnosis codes that an MA organization did not submit to CMS, validated HCCs may not have been included in enrollees' risk scores, which may cause those risk scores to be understated and may result in underpayments.

High-Risk Acute Stroke Diagnoses

An acute stroke occurs when blood vessels are obstructed causing reduced blood flow to the brain (ischemic stroke) or when a blood vessel in the brain leaks or ruptures (hemorrhagic stroke). An acute stroke is a life-threatening medical emergency that can cause lasting brain damage or long-term disability and thus requires prompt medical treatment in a hospital setting.

In 2020, a total of 773,999 MA enrollees had an acute stroke diagnosis code included on a physician, inpatient hospital, or outpatient hospital data record that mapped to the HCC for Ischemic or Unspecified Stroke (Acute Stroke HCC). We used data mining techniques and

[11] 42 CFR § 422.310(e) requires MA organizations (when undergoing an audit conducted by the Secretary) to submit "medical records for the validation of risk adjustment data." For purposes of this report, we use the terms "supported" or "not supported" to denote whether the reviewed diagnoses were evidenced in the medical records. If our audit determines that the diagnoses are supported or not supported, we accordingly use the terms "validated" or "not validated" with respect to the associated HCC.

discussions with medical professionals to identify acute stroke diagnoses at higher risk for miscoding. For this audit, we focused on enrollees who received an acute stroke diagnosis that mapped to the Acute Stroke HCC on physician data records on one to five dates of service during the service year but did not have an acute stroke diagnosis on a corresponding inpatient or outpatient hospital data record. In these instances, a diagnosis of history of stroke (which does not map to an HCC) typically should have been used. In this report, we refer to these diagnosis codes as "high-risk acute stroke diagnosis codes."

As of September 2025, the Office of Inspector General (OIG) issued 34 audit reports to individual MA organizations for which we reviewed high-risk diagnosis codes, including high-risk acute stroke diagnoses. Collectively, we found that for 1,146 of 1,185 of the enrollees selected for review who received an acute stroke diagnosis, the acute stroke diagnoses were not supported by medical records.

HOW WE CONDUCTED THIS AUDIT

Our audit included 240,401 MA enrollees nationwide who were enrolled in either a coordinated care plan or a private fee-for-service plan and for whom MA organizations submitted high-risk acute stroke diagnosis codes for the 2020 service year that mapped to the Acute Stroke HCC. During payment year 2021 (audit period), 554 MA organizations received increased risk-adjusted payments for these enrollees. We limited our review to the portions of the payments, totaling $477,460,953, that were associated with the high-risk acute stroke diagnosis codes.

We selected for audit a stratified random sample of 100 enrollees. We limited our review to the medical records associated with the physician data records that included the high-risk acute stroke diagnosis codes submitted to CMS for 97 of the 100 sampled enrollees, for which 63 MA organizations received $191,281 in payments associated with the high-risk acute stroke diagnosis codes.[12] The MA organizations provided these medical records for 93 of the 97 sampled enrollees.[13] We used an independent medical review contractor to review the medical records to determine whether the Acute Stroke HCC associated with the sampled enrollees was validated. For those that were not validated, if the contractor identified a diagnosis code that should have been submitted to CMS instead of the selected diagnosis code, we included the financial impact of the resulting HCC (if any) in our calculation of potential net overpayments.[14]

[12] The remaining three sampled enrollees were not relevant to the scope of this audit because they were not enrolled in an MA coordinated care plan or an MA private fee-for-service plan (footnote 27).

[13] Four MA organizations could not locate medical records for the remaining four sampled enrollees.

[14] For enrollees whose risk scores include four or more HCCs, CMS may assign an additional factor related to the number of HCCs that further increases the enrollee's risk score. For those sampled enrollees for whom the Acute Stroke HCC was not validated, we did not include the financial impact related to the additional factor included in the enrollee's risk score (if any) in our calculation of potential net overpayments.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix A contains the details of our audit scope and methodology, Appendix B contains our statistical sampling methodology, and Appendix C contains our sample results and estimates.

FINDINGS

MA organizations' submissions of high-risk acute stroke diagnosis codes to CMS for 97 sampled enrollees for use in CMS's risk adjustment program did not comply with Federal requirements. Specifically, for 93 sampled enrollees, the medical records that the MA organizations provided did not support the diagnosis codes and, for 4 enrollees, the MA organizations could not locate the medical records to support the diagnosis codes. Therefore, the associated Acute Stroke HCC was not validated for all 97 enrollees and resulted in $187,122 in potential net overpayments.[15]

As demonstrated by the errors found in our sample, CMS's procedures for collecting, identifying, and reviewing diagnosis codes for risk adjustment purposes, including CMS's instructions to MA organizations, did not prevent certain incorrect acute stroke diagnosis codes from being used in the risk adjustment program. On the basis of our sample results, we estimated that MA organizations received $461,958,186 in potential net overpayments for 2021.

FEDERAL REQUIREMENTS

CMS is required to make monthly payments to MA organizations that are adjusted for risk factors, including the health status of each enrollee (the Social Security Act §§ 1853(a)(1)(C) and (a)(3); 42 CFR § 422.308(c)). To adjust for health status, CMS applies a risk factor based on risk adjustment data submitted by MA organizations (42 CFR § 422.308).

MA organizations that contract with CMS agree to follow CMS's instructions in the *Medicare Managed Care Manual* (the Manual [last rev. Sept. 19, 2014]) and *Encounter Data Submission and Processing Guide* (the Guide [rev. March 2019]) for submitting data for risk adjustment purposes (see 42 CFR § 422.504(a)). CMS requires all submitted diagnosis codes to be coded according to the *International Classification of Diseases, Clinical Modification, Official Guidelines for Coding and Reporting* and to be documented in the medical record as a result of a face-to-

[15] We have qualified the findings as "potential" net overpayments because our review was limited to only those medical records associated with the physician data records that included the high-risk acute stroke diagnosis codes submitted to CMS and did not consider other medical records that may support the high-risk acute stroke diagnoses codes (footnote 24).

face encounter (42 CFR § 422.310(d)(1); 45 CFR §§ 162.1002(c)(2)-(3); the Manual, ch. 7, § 40; the Guide, § 2.1).

CMS requires MA organizations to submit risk adjustment data for each medical item and service an enrollee received using the Encounter Data System (EDS) (the Guide, § 2.1). CMS filters the data to identify the diagnosis codes eligible for risk adjustment using the methodology documented in its December 22, 2015, memo to MA organizations and other recipients ("Final Encounter Data Diagnosis Filtering Logic"). CMS also required MA organizations to submit data using the Risk Adjustment Processing System (RAPS) that was filtered based on the criteria established by CMS to identify diagnosis codes that were eligible for risk adjustment (the Manual, ch. 7, § 120).[16] Specifically, in addition to the requirements outlined above, CMS required that the data came from an acceptable data source (i.e., hospital inpatient facility, hospital outpatient facility, or physician) (the Manual, ch. 7, §§ 40 and 120).

To ensure risk-adjusted payment integrity and accuracy CMS conducts Risk Adjustment Data Validation (RADV) audits (42 CFR § 422.311(a)). RADV audits are CMS's main corrective action for overpayments made to MA organizations when there is a lack of documentation in the medical record to support the diagnosis codes submitted for risk adjustment. CMS selects MA organizations for RADV audits using a risk-based approach that focuses on HCCs that are more likely to be in error (88 Fed. Reg. 6645; Feb. 1, 2023).

MEDICARE ADVANTAGE ORGANIZATIONS' SUBMISSIONS OF HIGH-RISK ACUTE STROKE DIAGNOSIS CODES TO CMS DID NOT COMPLY WITH FEDERAL REQUIREMENTS

For 97 sampled enrollees, MA organizations' submissions of high-risk acute stroke diagnosis codes to CMS for use in CMS's risk adjustment program did not comply with Federal requirements. Specifically, the medical records that the MA organizations provided did not support the diagnosis codes for 93 enrollees and, for the remaining 4 enrollees, the MA organizations could not locate the medical records to support the diagnosis codes. In these 97 instances, the MA organizations should not have submitted the diagnosis codes to CMS and received the resulting potential net overpayment.

For the 93 enrollees for which the medical records did not support the acute stroke diagnosis code, we identified the following:

- For 68 enrollees, the associated medical records indicated that the enrollee had previously had a stroke; however, the records did not support an acute stroke diagnosis at the time of the physician's service.

  For example, for one enrollee, the independent medical review contractor stated that "there is no documentation of an acute cerebrovascular accident (CVA) that results in the assignment of the [Acute Stroke HCC]. CVA in April 2019 is listed in the Past Medical

[16] Beginning with payment year 2022, MA organizations were no longer required to submit data using RAPS.

History section ([i.e., diagnosis of history of stroke]), which does not result in an HCC." Further, we identified an inpatient hospital data record from 2019 on CMS's systems for this enrollee that included an acute stroke diagnosis code.

For the example provided, the associated MA organization indicated that it had a provider education program that included instruction on the proper coding of acute stroke diagnoses, including the proper coding of acute stroke and history of stroke. Additionally, the MA organization indicated that it reviews a sample of medical records on an annual basis to determine if provider-submitted diagnoses are supported by the records; however, the reviews are not designed to specifically target acute stroke diagnoses.

- For 22 enrollees, the medical records did not support an acute stroke diagnosis.

  For example, for one enrollee, the independent medical review contractor stated that "there is no documentation of an acute [CVA] that results in the assignment of the [Acute Stroke HCC]. The medical record documents a diagnosis of [stroke] without any active treatment plan. The patient was sent home and instructed to follow up in 12 months. If this were truly an acute condition, the patient would have been sent to the emergency [room]."

  For the example provided, the MA organization indicated that it provided instructions to clinicians emphasizing that acute stroke diagnoses are coded only during an inpatient hospital stay. Additionally, the MA organization indicated that it had procedures that focused on instances during which an acute stroke diagnosis was reported during a physician or outpatient hospital encounter. The MA organization stated that, in these instances, it reviewed the medical records to determine whether the diagnosis was supported and then corrected any improper diagnoses submissions if it did not find support. The MA organization indicated that, beginning with service year 2021, it began removing acute stroke diagnosis codes from the data it submitted to CMS if the diagnosis was not recorded on an inpatient hospital record.

- For one enrollee, the MA organization did not provide a legible medical record to support the acute stroke diagnosis; therefore, the Acute Stroke HCC was not validated.

- For one enrollee, the MA organization submitted an acute stroke diagnosis code (which was not supported in the medical records) instead of a diagnosis code for hemiplegia/hemiparesis (which was supported in the medical records). The independent medical review contractor stated that "there is no documentation of an acute [CVA] . . . [The] HCC [for hemiplegia/hemiparesis] was substantiated with a diagnosis of left sided hemiparesis . . . from an old CVA which should have been assigned instead of the submitted HCC." This error resulted in an underpayment.

- For one enrollee, the medical record was signed and credentialed by a pharmacist. For risk adjustment purposes, CMS uses only diagnoses that enrollees receive from acceptable data sources, which include face-to-face encounters with a provider, physician, or other practitioner. Because the record for this enrollee did not meet CMS's requirements for acceptable data sources, the Acute Stroke HCC was not validated.

CMS'S PROCEDURES DID NOT PREVENT POTENTIALLY INCORRECT ACUTE STROKE DIAGNOSIS CODES INCLUDED ON PHYSICIAN DATA RECORDS FROM BEING USED IN CMS'S RISK ADJUSTMENT PROGRAM

CMS's procedures for collecting, identifying, and reviewing diagnosis codes for risk adjustment purposes did not prevent certain incorrect acute stroke diagnosis codes from being used in the risk adjustment program. Specifically, neither CMS's instructions to MA organizations for the submission of diagnosis codes nor CMS's filtering of the diagnosis codes for use in the risk adjustment program addressed potentially incorrect acute stroke diagnosis codes included on physician data records. Further, regarding postpayment review, CMS's RADV audits are not intended to identify all improper diagnosis code submissions made by MA organizations.

According to guidance published by the American Academy of Professional Coders, acute stroke diagnoses are appropriate only during the acute encounter and should be confirmed by diagnostic studies in a hospital setting (e.g., emergency room or inpatient setting).[17] The potentially incorrect acute stroke diagnosis codes identified by our audit were included on physician data records and none of the enrollees in our sampling frame had an acute stroke diagnosis on an inpatient or outpatient hospital data record during the same service year as the physician data record.

CMS officials explained that they do not provide guidance or requirements to MA organizations regarding diagnostic coding; rather, it is the responsibility of the MA organizations to ensure the accuracy of risk adjustment data submitted to CMS. We obtained the following information regarding the compliance procedures, if any, for the 63 MA organizations that submitted acute stroke diagnosis codes for the 97 sampled enrollees and found that:

- Fifty-nine MA organizations indicated that they had preventative techniques designed to promote accurate acute stroke diagnosis coding.

- Twenty-five MA organizations indicated that they had procedures to detect and correct incorrectly submitted acute stroke diagnoses.

- Twelve MA organizations indicated that they had begun utilizing the OIG Toolkit to enhance their compliance procedures to focus on acute stroke diagnosis codes that we

[17] The American Academy of Professional Coders is a training and credentialing organization for medical coders.

identified as being at high risk for miscoding.[18] These procedures included measures to prevent, detect, and correct improper acute stroke diagnosis codes included on a physician data record.

- One MA organization did not indicate that it has attempted or is attempting to address the miscoding of acute stroke diagnoses.

We acknowledge that CMS allows MA organizations to design their own compliance programs to prevent, detect, and correct noncompliance with CMS requirements; however, our prior audits and this audit demonstrate that high-risk acute stroke diagnosis codes were almost always not supported by medical records. Further, CMS's filters did not prevent these diagnosis codes from being used in CMS's risk adjustment program for payment. Therefore, we believe that CMS could improve its procedures related to the use of high-risk acute stroke diagnosis codes in its risk adjustment program.

For 773,999 MA enrollees, MA organizations submitted an acute stroke diagnosis code to CMS for the 2020 service year

Our audit included 240,401 MA enrollees that were at high risk for having an incorrectly submitted acute stroke diagnosis code

All 97 sampled enrollees' high-risk acute stroke diagnosis codes were not supported by the medical records.

INCORRECTLY SUBMITTED ACUTE STROKE DIAGNOSES RESULTED IN AN ESTIMATED $462 MILLION IN POTENTIAL NET OVERPAYMENTS TO MEDICARE ADVANTAGE ORGANIZATIONS

MA organizations received $187,122 in potential net overpayments for the 97 sampled enrollees. On the basis of our sample results, we estimated that CMS made $461,958,186 in potential net overpayments to MA organizations that incorrectly submitted high-risk acute stroke diagnosis codes for enrollees for our audit period. (See Appendix C for our sample results and estimates.) Because the sampling frame for this audit included multiple MA organizations that submitted acute stroke diagnoses to CMS, we do not recommend that CMS pursue recovery of the estimated $462 million in potential net overpayments.

RECOMMENDATION

We recommend that CMS implement a procedure to prevent overpayments to MA organizations when acute stroke diagnosis codes are submitted by MA organizations on a physician data record and the enrollee does not have an acute stroke diagnosis on an inpatient or outpatient hospital data record during the same service year (e.g., CMS filter of EDS data to identify and address these diagnosis codes or instructions to MA organizations to implement a control to prevent the submission of these diagnosis codes), which could have resulted in cost savings of $462 million.

[18] OIG, *Toolkit To Help Decrease Improper Payments in Medicare Advantage Through the Identification of High-Risk Diagnosis Codes* (A-07-23-01213), Dec. 14, 2023.

CMS COMMENTS AND OIG RESPONSE

In written comments on our draft report, CMS did not indicate concurrence or nonconcurrence with our recommendation. In this regard, CMS stated that it has "made significant progress to promote MA payment accuracy and reaffirm [its] commitment to ensuring all MA [organizations] . . . accurately report patient diagnoses used for payment." CMS referenced its expansion of its RADV audits to "confirm that diagnoses used for payment are supported by medical records." Additionally, CMS stated that, in 2026, it completed the phase-in of an updated risk adjustment model intended to support more accurate payments to MA organizations. To these points, CMS stated that it will take our report into consideration when it "explore[s] approaches to review diagnosis submission practices" and "engage[s] with MA organizations on submissions if issues are identified." CMS also provided technical comments, which we addressed as appropriate.

We acknowledge that CMS's updates to its risk adjustment model and that its RADV audits are designed to promote payment accuracy; however, CMS has an opportunity to better address improper payments by implementing our recommendation. Of the 95 acute stroke diagnosis codes that we used for this audit, 91 are also used in CMS's new payment model; thus, the same pattern of incorrect submissions that we identified in this report may continue. Further, RADV audits are detection and correction techniques that CMS uses to identify and collect overpayments; these audits do not prevent improper payments.

Therefore, we maintain that a prepayment action is needed. Implementing our recommendation would prevent overpayments, such as those identified in this audit, from occurring and would result in substantial cost savings under CMS's updated payment model. Accordingly, we encourage CMS to use the process it described for engaging with MA organizations on identified submission practice issues as an opportunity to implement a preventative procedure.

CMS's comments, excluding technical comments, are included as Appendix D.

APPENDIX A: AUDIT SCOPE AND METHODOLOGY

SCOPE

We identified 240,401 MA enrollees nationwide who were enrolled in a coordinated care or private fee-for-service plan and for whom MA organizations submitted high-risk acute stroke diagnosis codes for the 2020 service year. MA organizations received $5,053,511,902 in payments from CMS for these enrollees in 2021, of which $477,460,953 was associated with the high-risk acute stroke diagnosis codes. We reviewed 97 enrollees with payments to MA organizations totaling $2,118,500. We limited our review to the portion of these payments that were associated with the high-risk acute stroke diagnosis codes ($191,281).

Our audit objective did not require an understanding or assessment of CMS's complete internal control structure; therefore, we limited our review of internal controls to those directly related to our objective. Specifically, we reviewed CMS's controls for preventing acute stroke diagnosis codes that do not comply with CMS's program requirements from being used in CMS's risk adjustment program.

We performed audit work from July 2023 through January 2026.

METHODOLOGY

We took the following steps to accomplish our objective:

- Reviewed applicable Federal laws, regulations, and guidance

- Discussed with CMS program officials the Federal requirements that MA organizations must follow when submitting diagnosis codes to CMS, and CMS's policies and procedures for monitoring these diagnosis codes to detect and correct noncompliance with Federal requirements

- Identified, through data mining and discussions with medical professionals at a Medicare administrative contractor, 95 acute stroke diagnosis codes that were at high risk for noncompliance

- Developed our sampling frame[19] using data from CMS's Integrated Data Repository (IDR) using extracts from:

[19] Our sampling frame consisted of enrollees for whom high-risk acute stroke diagnosis codes were submitted to CMS. For more details, see Appendix B.

- CMS's RAPS[20] and the EDS[21] to identify enrollees who received high-risk acute stroke diagnosis codes from a physician during the service year

- CMS's Risk Adjustment System (RAS)[22] to identify enrollees who received an Acute Stroke HCC associated with the high-risk acute stroke diagnosis codes

- CMS's Medicare Advantage Prescription Drug System (MARx)[23] to identify enrollees for whom CMS made monthly Medicare payments to an organization for the relevant portions of the service and payment years

- Assessed the reliability of data obtained from CMS's systems by: (1) considering prior data reliability assessments on data from CMS's IDR; and (2) performing electronic testing of the data, such as verifying that the data met the parameters of our request, and determined that the data were sufficiently reliable for purposes of this audit

- Selected for audit a stratified random sample of 100 enrollees and, for each sampled enrollee, requested the supporting medical records from the associated MA organization[24]

- Used an independent medical review contractor to perform a coding review for 93 enrollees (footnotes 12 and 13) to determine whether the high-risk acute stroke diagnosis codes submitted to CMS complied with Federal requirements[25]

The independent medical review contractor's coding review followed a specific process to determine whether there was support for a diagnosis code and the associated HCC. Specifically:

[20] MA organizations used the RAPS to submit diagnosis codes to CMS.

[21] CMS uses the EDS to collect encounter data records, that include diagnosis codes, from MA organizations.

[22] The RAS identifies the HCCs that CMS factors into each enrollee's risk score calculation.

[23] The MARx identifies the payments made to MA organizations.

[24] For CMS's RADV audits, MA organizations may provide multiple medical records that they believe validate an HCC under review. For this audit, we limited our review to only those medical records associated with the physician data records that included the high-risk acute stroke diagnosis codes submitted to CMS.

[25] The independent medical review contractor used senior coders, all of whom possessed one or more of the following qualifications and certifications: Registered Health Information Technician (RHIT), Certified Coding Specialist (CCS), Certified Coding Specialist–Physician-Based (CCS-P), Certified Professional Coder (CPC), and Certified Risk Adjustment Coder (CRC). RHITs have completed a 2-year degree program and have passed an American Health Information Management Association (AHIMA) certification exam. The AHIMA also credentials individuals with CCS and CCS-P certifications and the American Academy of Professional Coders credentials both CPCs and CRCs.

- If the first senior coder found support for the diagnosis code on the medical record(s), the HCC was considered validated.

- If the first senior coder did not find support on the medical record, a second senior coder performed a separate review of the same medical record(s):

    - If the second senior coder also did not find support, the HCC was considered to be not validated.

    - If the second senior coder found support, then the coding supervisor reviewed the medical record(s) to make the final determination.

- If either the first or second senior coder asked the coding supervisor for assistance, the coding supervisor's decision became the final determination. Additionally, at any point in the review process, a senior coder or coding supervisor may have consulted a physician reviewer for additional clarification.

After final determinations were made for each sampled enrollee, we:

- Calculated the potential overpayment or underpayment (if any) for each sampled enrollee who had an Acute Stroke HCC that was not validated

- Estimated the total potential net overpayment that CMS made to MA organizations for the high-risk acute stroke diagnoses incorrectly submitted to CMS for the enrollees in the sampling frame for the audit period

- Obtained from the MA organizations that submitted the acute stroke diagnoses for the 97 sampled enrollees, information pertaining to the MA organizations' procedures to prevent, detect, and correct the submission of inaccurate acute stroke diagnosis codes to CMS

- Discussed the results of our audit with CMS officials

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

APPENDIX B: STATISTICAL SAMPLING METHODOLOGY

SAMPLING FRAME

We identified 245,111 enrollees who: (1) received an acute stroke diagnosis that mapped to the Acute Stroke HCC on physician data records on up to five dates of service during the service year but did not have an acute stroke diagnosis on a corresponding inpatient or outpatient hospital data record, (2) did not have a diagnosis that mapped to the HCC for Cerebral Hemorrhage during the service year,[26] (3) were continuously enrolled in either the same MA organization or other type of Medicare managed care organization throughout all of the 2020 service year and January of the following year, and (4) were not classified as being enrolled in hospice or as having end-stage renal disease at any time during 2020 or in January of the following year.[27]

SAMPLE UNIT

The sample unit was an enrollee.

SAMPLE DESIGN AND SAMPLE SIZE

The design for our statistical sample comprised three strata of enrollees as shown in Table 2.

Table 2: Sample Design for Audited High-Risk Acute Stroke Diagnosis

Stratum	Range of CMS Payment Amounts for Acute Stroke HCC	Frame Count of Enrollees	CMS Payments for Acute Stroke HCC	Sample Size
1	$45.52 to $1,877.20	81,942	$99,271,663	34
2	$1,877.28 to $2,299.25	93,996	194,270,165	33
3	$2,299.32 to $5,875.35	69,173	197,321,317	33
	Total	**245,111**	**$490,863,145**	**100**

[26] The Acute Stroke HCC and the HCC for Cerebral Hemorrhage are in a related-disease group and the HCC for Cerebral Hemorrhage is the more severe manifestation of the disease. Therefore, if an MA organization submitted diagnoses for an enrollee that mapped to the Acute Stroke HCC and to the HCC for Cerebral Hemorrhage, only the HCC for Cerebral Hemorrhage was used to calculate the enrollee's risk score.

[27] After the sample was selected, we identified 4,710 enrollees in the sampling frame who were not relevant to the scope of this audit because they were enrolled in a Medicare managed care organization that was not an MA coordinated care or an MA private fee-for-service plan. Our report discusses the 240,401 enrollees who were enrolled in an MA coordinated care or an MA private fee-for-service plan.

SOURCE OF RANDOM NUMBERS

We generated the random numbers with the OIG, Office of Audit Services (OAS), statistical software.

METHOD FOR SELECTING SAMPLE ITEMS

We sorted the items in each stratum, in ascending order, by an enrollee identification number and then consecutively numbered the items in each stratum in the sampling frame. After generating random numbers according to our sample design, we selected the corresponding frame items for review.

ESTIMATION METHODOLOGY

We used the OIG, OAS, statistical software to calculate the point estimate and the corresponding two-sided, 90-percent confidence interval for the total potential net overpayments CMS made to MA organizations for high-risk acute stroke diagnosis codes incorrectly submitted to CMS for enrollees in the sampling frame. We note that the estimate of potential net overpayment amounts that CMS made to MA organizations only applies to the relevant sample units in our sampling frame (footnote 27).

APPENDIX C: SAMPLE RESULTS AND ESTIMATES

Table 3: Sample Details and Results for Relevant Sample Frame Enrollees[28]

Stratum	Frame Count of Enrollees	CMS Payments for Acute Stroke HCC (for Enrollees in Frame)	Sample Size	CMS Payments for Acute Stroke HCC (for Sampled Enrollees)	Number of Sampled Enrollees With an Acute Stroke HCC That Was Not Validated	Potential Net Overpayments for Acute Stroke HCC That Was Not Validated (for Sampled Enrollees)
1	80,709	$98,163,304	34	$41,233	34	$41,233
2	93,879	194,027,715	33	67,634	33	67,634
3	65,813	185,269,934	30	82,414	30	78,255
Total	**240,401**	**$477,460,953**	**97**	**$191,281**	**97**	**$187,122**

Table 4: Estimated Potential Net Overpayments for Relevant Enrollees in the Sampling Frame (*Limits Calculated for a 90-Percent Confidence Interval)*

Point Estimate	$461,958,186
Lower Limit	$442,231,839
Upper Limit	$477,460,953[29]

[28] See footnote 12.

[29] The estimated upper limit was greater than the total CMS payments associated with the Acute Stroke HCC for the relevant enrollees in the sampling frame. Therefore, we capped the upper limit to the value of the relevant sampling frame.

APPENDIX D: CMS COMMENTS

DEPARTMENT OF HEALTH & HUMAN SERVICES

Centers for Medicare & Medicaid Services

Administrator
Washington, DC 20201

DATE: March 3, 2026

TO: John D. Hagg
Acting Deputy Inspector General for Audit Services

FROM: Dr. Mehmet Oz
Administrator

SUBJECT: Office of Inspector General (OIG) Draft Report: *CMS Potentially Overpaid Medicare Advantage Organizations $462 Million Based on Certain Unsupported Acute Stroke Diagnosis Codes*, A-02-23-01020

The Centers for Medicare & Medicaid Services (CMS) appreciates the opportunity to review and comment on the Office of Inspector General's (OIG) draft report. CMS is committed to the sustainability of the Medicare Advantage (MA) program.

Beneficiary risk scores are calculated with diagnoses that MA organizations report to CMS. Diagnosis codes used for risk adjustment must meet specific criteria, including that the diagnosis is documented in the medical record. Plans annually attest to the accuracy of their data (see 42 C.F.R. § 422.504(l)) and are obligated to report and return overpayments identified after the final risk adjustment data submission deadline within 60 days of being identified (see 42 C.F.R. § 422.326(d)).

In CY 2024, CMS finalized an updated Part C Risk Adjustment Model (for organizations other than Program of All-Inclusive Care for the Elderly (PACE) Organizations) and announced a three-year phase-in of the use of that model, referred to as the 2024 CMS-HCC risk adjustment model. CMS continued phasing in the 2024 CMS-HCC risk adjustment model for CY 2025 and completed the three-year phase-in of the 2024 CMS-HCC risk adjustment model in CY 2026.[1] The updated risk adjustment model supports more accurate payments in MA.

To further ensure accurate diagnoses, CMS conducts Risk Adjustment Data Validation (RADV) audits to confirm that diagnoses used for payment are supported by medical records. RADV audits measure the accuracy of diagnostic information submitted by MA organizations through medical record coding reviews and uses the results of these audits to identify and recover overpayments for individual MA contracts. In May 2025, CMS announced a significant expansion of its auditing efforts for MA plans.[2] Expanded audits are already underway and CMS plans to audit most eligible MA contracts for payment years 2019 through 2024. CMS will use advanced data analytics and tools to efficiently review medical records and flag potentially

[1] Please see at https://www.cms.gov/newsroom/fact-sheets/2026-medicare-advantage-and-part-d-rate-announcement
[2] Please see at https://www.cms.gov/newsroom/press-releases/cms-rolls-out-aggressive-strategy-enhance-and-accelerate-medicare-advantage-audits

unsupported diagnoses. By leveraging advanced analytics and technology, CMS is increasing the pace and scope of RADV audits from 60 to more than 500 MA contracts per payment year. CMS is also increasing the size of audit samples to up to 200 enrollees for the largest MA contracts.

CMS takes seriously its responsibility to strengthen payment accuracy and modernize risk adjustment in the MA program. OIG's recommendations and CMS's responses are below.

OIG Recommendation

CMS should implement a procedure to prevent overpayments to MA organizations when acute stroke diagnosis codes are submitted by MA organizations on a physician data record and the enrollee does not have an acute stroke diagnosis on an inpatient or outpatient hospital data record during the same service year (e.g., CMS filter of EDS data to identify and address these diagnosis codes or instructions to MA organizations to implement a control to prevent the submission of these diagnosis codes), which could have resulted in cost savings of up to $462 million.

CMS Response

As noted above, CMS has made significant progress to promote MA payment accuracy and reaffirm our commitment to ensuring all MA plans comply with federal requirements and accurately report patient diagnoses used for payment. CMS intends to explore approaches to review diagnosis submission practices using more recent data than was reviewed in the OIG study, as well as engage with MA organizations on submissions if issues are identified. CMS will take OIG's report into consideration throughout this process.

CMS thanks OIG for their efforts on this issue and looks forward to working with OIG on this and other issues in the future.

Report Fraud, Waste, and Abuse

OIG Hotline Operations accepts tips and complaints from all sources about potential fraud, waste, abuse, and mismanagement in HHS programs. Hotline tips are incredibly valuable, and we appreciate your efforts to help us stamp out fraud, waste, and abuse.

TIPS.HHS.GOV

Phone: 1-800-447-8477

TTY: 1-800-377-4950

Who Can Report?

Anyone who suspects fraud, waste, and abuse should report their concerns to the OIG Hotline. OIG addresses complaints about misconduct and mismanagement in HHS programs, fraudulent claims submitted to Federal health care programs such as Medicare, abuse or neglect in nursing homes, and many more. Learn more about complaints OIG investigates.

How Does It Help?

Every complaint helps OIG carry out its mission of overseeing HHS programs and protecting the individuals they serve. By reporting your concerns to the OIG Hotline, you help us safeguard taxpayer dollars and ensure the success of our oversight efforts.

Who Is Protected?

Anyone may request confidentiality. The Privacy Act, the Inspector General Act of 1978, and other applicable laws protect complainants. The Inspector General Act states that the Inspector General shall not disclose the identity of an HHS employee who reports an allegation or provides information without the employee's consent, unless the Inspector General determines that disclosure is unavoidable during the investigation. By law, Federal employees may not take or threaten to take a personnel action because of whistleblowing or the exercise of a lawful appeal, complaint, or grievance right. Non-HHS employees who report allegations may also specifically request confidentiality.

Stay In Touch

Follow HHS-OIG for up to date news and publications.

 OIGatHHS

 HHS Office of Inspector General

Subscribe To Our Newsletter

OIG.HHS.GOV

Contact Us

For specific contact information, please visit us online.

U.S. Department of Health and Human Services
Office of Inspector General
Public Affairs
330 Independence Ave., SW
Washington, DC 20201

Email: Public.Affairs@oig.hhs.gov