

Calculation of Rural Emergency Hospital (REH) Monthly Additional Facility Payment for 2023

CM Payment Standardization

Background

The Consolidated Appropriations Act (CCA) of 2021 defines the Rural Emergency Hospital (REH) monthly additional facility payment for 2023 as the amount equal to 1/12 of the excess (if any) of the payment amount CAHs received in 2019 over what Medicare would have paid these hospitals under the inpatient (IP), outpatient (OP), and skilled nursing facility (SNF) prospective payment systems (PPSs) during the same year, divided by the total number of CAHs in 2019. This document outlines the draft methodology we propose to calculate the REH monthly additional facility payment as required by the CCA. The formula for the REH monthly additional facility payment is the following:

$$REH\ MAFP = \frac{(\sum_{i=1}^n Actual\ Payment_i) - (\sum_{i=1}^n Modeled\ PPS\ Payment_i)}{(n * 12)}$$

Where:

i represents a Critical Access Hospital in 2019

n represents the total number of CAHs

The formula for the REH monthly additional facility payment includes 3 parameters to determine the amount:

- i. the sum of actual payments made to CAHs in 2019
- ii. the sum of modeled PPS payments CAHs would have received in 2019
- iii. the total number of CAHs in 2019

Actual Payment

1. Classify the appropriate claims based on the Provider CCN

File Setting	Description
IP	<ul style="list-style-type: none"> • CCN 3rd 4th digits = "13" is classified as Critical Access Hospital - Acute Care • CCN 3rd digit = "R" is classified as Critical Access Hospital - Rehabilitation Unit • CCN 3rd digit = "M" is classified as Critical Access Hospital - Psychiatric Unit
OP	<ul style="list-style-type: none"> • CCN 3rd 4th digits = "13" is classified as Critical Access Hospital - Acute Care
SNF	<ul style="list-style-type: none"> • CCN 3rd digit = "Z" is classified as Critical Access Hospital - Swing bed

2. Exclude Medicare Advantage claims (i.e., claims with the presence of Condition Code 04)¹ from calculation
3. Sum the provider payment, coinsurance, and deductible (without other primary payment) to derive the claim payment
 - For OP claims, identify the claim outlier payment from the value code 17 amount

¹ For the OP file setting, there is no exclusion based on the payment rules (i.e., the sum may include other fee schedule payments in addition to OPPS payment).

4. Sum the claim payments for claims with claim through date in calendar year 2019²

Rationale for Use of Claims Data

This section provides context and information for the use of the approach described above. There are some challenges for the calculation of actual payment to CAHs in 2019. Unlike PPS hospitals where each service has a prospectively determined payment rate, payment to CAHs is configured as 101% of the cost of the service. However, the true cost of CAHs cannot be determined until Medicare collects cost report data for CAHs, which are typically filed months after the end of the fiscal year. Throughout the course of a year, CAHs receive interim payments that are based on historical costs as claims are processed. At the end of each fiscal year, CMS will settle final cost numbers for CAHs with either recovery of overpayment or adjustment for underpayment.

Medicare cost report data is a candidate data source to calculate actual payment to CAHs. However, CAHs may have different fiscal year start and end dates; for example, it may either be October 1st to September 30th or July 1st to June 30th. Some cost reports may not have a complete year. This can happen in certain situations such as change of ownership, closure, and change of fiscal year. If the fiscal year of a CAH is not the same as the calendar year 2019, then the exact total payment to the CAH for calendar year 2019 cannot be determined by cost report data. Cost report data can only provide aggregate amounts over the fiscal year (i.e., not for an individual payment record). Also, cost report data may be finalized years after the date of service. Empirical analyses show that a small number of 2019 CAH cost reports are not finalized as of April 2022, despite the fact that they had positive amount Medicare fee-for-service (FFS) claims in 2019.

Medicare FFS claims data is another option of data source to calculate the actual payment for CAHs. The advantage is that each claim can be mapped to a calendar year based on the claim date variable. The total claim payment to CAHs in calendar year 2019 can be accurately determined by simply summing up claim payment variables. As noted above, however, the total claim payment does not include year-end cost settlements. Empirical analysis shows that cost report data and claims data generate relatively similar (though different) results.³

² This does not include any Medicare payment that is not claims-based.

³ Preliminary analyses have indicated that the claims data yields the following when compared to cost report data: (i) about \$106 million less for inpatient, (ii) about \$710 million more for outpatient, and (iii) about \$155 million less for SNF. This is based on this past comparison between the CMS data analytics contractor and the CMS Office of the Actuary (OACT); this may be updated if there are any updates discovered on either of our ends.

Number of CAHs

The number of CAHs in 2019 is obtained by creating a unique list of Provider CCNs with positive claim payments that identify one main CAH for the psychiatric, rehabilitation, and swing-bed units that submit IP or SNF claims.

This is derived with the following approach:

1. Identify all Medicare fee-for-service (FFS) claims billed by CAHs that have a positive payment amount for calendar year 2019
2. Create a list of the Provider CCNs for these claims
3. Create a new list of Unique CAH CCNs where you apply the following change: for CCNs where the 3rd digit is “R,” “M,” or “Z,” replace the CCN where that 3rd digit is replaced with “1” and keep all other digits the same
4. Count the number of unique CCNs in this list to derive the total number of CAHs in calendar year 2019

CAH Inpatient Prospective Payment (IPPS) Calculation⁴

Preparing Inpatient Claims for CAHs

1. Create indicator for CAH claims by requiring the 3rd & 4th digits of the Provider CCN to be “13”.⁵
2. Create indicator for Medicare Advantage claims (encounter claims) by checking condition code “65”.
3. Create indicator for claims with other primary payer than Medicare by checking positive value in the other primary payer payment amount field on the claim. The PPS payment calculation is the same as claims with Medicare as the primary payer.
4. Feed CAH claims through Medicare Severity-Diagnosis Related Group (MS-DRG) grouper software to assign MS-DRG code. If the DRG code field on the claim is empty or invalid, take the grouper-assigned MS-DRG code as input to calculate payment. Otherwise, take the claim MS-DRG code as input.
5. Group CAH claims that have the same Provider CCN, Admission Date, and Beneficiary ID combination into inpatient stays.⁶ Take the benefit exhaust date (if present and earlier than discharge date) or discharge date of the last claim in the grouping as the discharge date of the stay.
6. Identify paid CAH stays by checking if there is at least one paid claim (i.e., the Type-of-Bill is not “110”) within the stay. The non-paid stays or non-discharging claims will be assigned zero payment, and the discharging claim (last claim) will be assigned the total PPS payment for the stay.

⁴ The IPPS calculation largely follows the IPPS price program logic. Source code:

<https://www.cms.gov/PricerSourceCodeSoftware>

⁵ See the CMS State Operation Manual for detailed logic – **CMS State Operations Manual, Chapter 2-2779A**

<https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/som107c02.pdf>.

⁶ PPS payment is made at the stay level instead of the claim level, i.e., there will be up to one final claim per inpatient stay. CAHs can split-bill an inpatient stay, i.e., multiple claims that make up one stay can have positive payment. In order to calculate PPS payment for CAH claims, stay grouping is necessary.

Calculating Core IPPS Payment

The Core IPPS payment includes the 4 components described in the following sections.

DRG Payment

1. DRG payment is calculated as the sum of the operating base rate and capital base rate multiplied by DRG weight, and geographic adjustments are applied; DRG payment is multiplied by the Transfer Fraction for applicable stays.
 - The **operating** and **capital base rates** and **DRG weight** are taken from the relevant Final Rule/Correction Notice for the fiscal year
 - **Transfer Fraction** is calculated using the covered days of stay and the Geometric **Mean Length of Stay** of the DRG code, per the post-acute-care transfer adjustment policy.
 - **Operating geographic adjustment factor** is calculated as the weighted sum of wage index and operation cost-of-living adjustment; the weights are the labor share and one minus the labor share.
 - **Capital geographic adjustment** is the wage index raised to the power of 0.6848, multiplied by capital cost-of-living adjustment.
 - **Wage index** is taken from the CMS provider wage index file or impact file. If not found, take wage index from CBSA wage index file or inpatient provider specific file.
 - The **covered length of stay** is calculated as the maximum of utilization days and cost report days. If either is 0, take the discharge date minus admission date plus one as the covered length of stay.

New Technology Add-On Payments

1. Check the applicable relevant Diagnosis, Procedure, and Drug code on the claim to determine if the claim is eligible to receive new-tech add-on payment.
2. Calculate the new-tech payment as the maximum amount for the new-tech or the operating loss multiplied by the new-tech factor, whichever is smaller.
 - The operating loss is defined as operation cost minus operating DRG payment (defined in the [“DRG Payment”](#) section above)
3. Perform New-Tech add-on calculation for all applicable new technologies found on claim and sum all eligible New-Tech add-ons as total new-tech add-on

Outlier Payments

1. Calculate outlier payment as the excess cost over outlier threshold multiplied by the cost sharing factor
 - **Cost** is defined as the sum of operating cost and capital cost
 - **Operating cost** is estimated by total covered charges multiplied by operating cost-to-charge ratio
 - **Capital cost** is estimated by total covered charges multiplied by capital cost-to-charge ratio, divided by wage index of provider raised to the power of 0.6848

Clotting Factor Payments

1. Calculate the clotting factor payment as the product of revenue unit of clotting factor line and the clotting factor payment rate from the Part B drug ASP file

Adjusting PPS Payment

The following sections describe adjustments to the payment calculation. This methodology includes Disproportionate Share Hospital (DSH) payment, Uncompensated Care Payment (UCP), Indirect Medical Education (IME) payment, and Low-Volume Adjustment (LVA) payment. Performance-based payment adjustments, such as Value-based Purchasing, Hospital Readmission Reduction Program, and Hospital Acquired Condition, are not included. These performance programs typically exclude CAHs and are of smaller magnitude than IME, DSH, UCP and LVA. It would be very cost-prohibitive to re-calculate these performance adjustments with CAHs included.

Disproportionate Share Hospital (DSH) and Uncompensated Care Payment (UCP)

The DSH and UCP are both provider-specific add-on payments for IPPS claims. In order to apply these 2 adjustments to CAHs, we must assess how they are calculated for IPPS hospitals. DSH is a percentage-based adjustment to the IPPS DRG payment that is determined by the sum of: **(1)** the percentage of Medicare inpatient days attributed to patients eligible for both Medicare Part A and Supplemental Security Income (SSI), and **(2)** the percentage of total inpatient days attributable to patients eligible for Medicaid but not Medicare Part A. Additionally, UCP is also determined by **(3)** the percent of individuals under 65 who are uninsured, and **(4)** hospitals' amounts of uncompensated care. All 4 factors of DSH/UCP are ultimately determined by the demographics the hospitals serve.

Operationally, CMS collects and calculates these factors from hospitals' cost report data from prior years. If CAHs' cost report data are as complete and timely as that of IPPS hospitals, DSH and UCP could be calculated for CAHs in the same way. However, since CAHs are actually reimbursed by cost, they do not have the same incentives to fill in their cost reports as IPPS hospitals. Because of the data availability and validity concerns, we do not propose to calculate DSH/UCP directly from cost report data.

To simplify the calculation, define the DSH UCP ratio as the ratio of a hospital's total DSH and UCP amount over its core payment (i.e. DRG payment) for 2019. The goal is to calculate a reasonable DSH UCP ratio for CAHs. Starting from the premise that DSH/UCP are determined by the demographics the hospitals serve, we take the following steps:

- (1) Select IPPS hospitals that are located in rural areas.
- (2) For each CAH, identify the IPPS hospital that is closest to it.
- (3) Identify the closest rural IPPS hospital and then calculate the average DSH UCP ratio.

As a validation, we run a linear regression model that predicts an IPPS hospital's DSH UCP ratio using urban/rural indicator, the percentage of population below the poverty line (at zip code level, obtained from American Community Survey) and the percentage of dually enrolled inpatient beneficiaries (calculated from claims and enrollment data). Then, apply the parameter estimates of the model to the CAHs (i.e., out of sample prediction) and calculate the average predicted DSH UCP ratio. The results show all the covariates are significant predictors of DSH UCP ratio. Furthermore, the validation produces very similar DSH UCP ratios for CAHs as the proposed method.

Indirect Medical Education (IME)

The IME payment is a provider-specific add-on payment for IPPS claims. The IME adjustment factor is determined by a hospital's ratio of residents to beds. Operationally, CMS collects and calculates the adjustment from hospitals' cost report data from prior years. Because of the data availability and validity concerns (stated above), we do not propose to calculate IME payment directly from cost report data.

Define the IME ratio as the ratio of a hospital's total IME payment over its core payment (i.e. DRG payment) for 2019. The goal is to calculate a reasonable IME ratio for CAHs. We take the following steps:

- (1) Select IPPS hospitals that are located in rural areas.
- (2) For each CAH, identify the IPPS hospital that is closest to it.
- (3) Identify the closest rural IPPS hospital and then calculate the average IME ratio.

As validation, run a linear regression model that predicts an IPPS hospital's IME ratio using urban/rural indicator and the average IPPS DRG weight per discharge (calculated from claims data). The urban/rural indicator is assumed to be correlated to the likelihood of a hospital to run an approved graduate medical education (GME) program and attractiveness of such program to medical school graduates; the average IPPS DRG weight is a measurement of level of complexity of inpatient care a hospital provides and is assumed to be correlated to the size of and need for GME. The results show both urban/rural indicator and average IPPS DRG weight per discharge are significant predictors of IME ratio.

Low Volume Adjustment

The Low-Volume Hospital Payment Adjustment is additional payment adjustment based on the per discharge amount (including capital, DSH, IME, and outlier payments) to the qualified IPPS hospitals. The qualifying criteria are: (1) the hospital is more than 15 road miles from another subsection (d) hospital, and (2) the hospital has less than 3,800 total discharges during the fiscal year. Since CAHs must be located either more than 35-miles from the nearest hospital (or more than 15 miles in areas with mountainous terrain or with only secondary roads), they meet criterion 1 for low volume adjustment. The adjustment factor is calculated using the following formula:

Low-Volume Hospital Payment Adjustment = $0.25 - [0.25/3300] \times (\text{number of total discharges} - 500)$ = $(95/330) - (\text{number of total discharges} / 13,200)$ ⁷

The number of total discharges of CAHs is obtained from Hospital Cost Report Data, Worksheet S-3, Part I, Line 14, and Column 15.

Other Adjustments

1. (-) Device credit (if applicable): Device credit amount is taken from the Value Code "FD" amount and deducted from payment.
2. Sequestration:
 - Subtract the actual coinsurance and deductible amount from PPS payment, and remove 2% as sequester reduction
 - Subtract the sequester reduction from the PPS payment

⁷ 2019 IPPS Final Rule <https://www.govinfo.gov/content/pkg/FR-2018-08-17/pdf/2018-16766.pdf>

CAH Inpatient Rehabilitation Facility (IRF) and Inpatient Psychiatric Facility (IPF) PPS Payment Calculation

1. IRF PPS rules currently apply to claims furnished by the rehabilitation units of CAHs (the 3rd digit of the Provider CCN is "R.")
2. IPF PPS rules currently apply to claims furnished by the psychiatric units of CAHs (the 3rd digit of the Provider CCN is "M.")
3. The Rehabilitation and Psychiatric Units of CAH are actually paid by IRF PPS and IPF PPS payment rules; therefore, we calculate their PPS payment by summing up their actual payment

Outpatient PPS Payment Calculation⁸

Preparing Outpatient Claims for CAHs

1. Create indicator for CAH claims by requiring the 3rd & 4th digits of the Provider CCN to be "13" or Type of Bill "85x".
2. Feed CAH claim lines to the CMS IOCE grouper software⁹ to assign Status Indicator, Ambulatory Payment Classification (APC) code,¹⁰ and Discount Formula Indicator.

Calculating OPSS Payment for CAHs

1. Flag claim lines that have OPSS payable status indicators.¹¹ For claim lines that have APC assignment, obtain relevant APC payment rate from the OPSS Final Rule/Correction Notice data files. Apply the following APC adjustments, as applicable:
 - Device Credit, taken from value code "FD", is deducted from payment;
 - Off-campus Provider Based Department deduction indicated by modifier PO;
 - Computed tomography reduction (indicated by modifier CT and HCPCS code);
 - Reduction of X-rays taken with film (indicated by modifier FX);
 - 22.5% ASP rate reduction for Part B drugs (indicated by modifier JG and status indicator K);
2. Adjust APC payment rate with OPSS discount factor based on the Discount Formula Indicator. Multiply adjusted APC payment rate with the number of revenue units to get APC payment, when applicable.
3. Adjust APC payment with geographic adjustment factor.
 - Geographic adjustment factor is the sum of labor share multiplied by wage index and non-labor share.
 - Wage index is determined by the wage index file, CBSA code, and provider specific record of the provider.
4. Calculate line outlier payment by multiplying excess line cost over *line multiple threshold* with OPSS loss share ratio, if line estimated cost is greater than line multiple threshold and line fixed threshold.

⁸ The OPSS payment calculation largely follows the OPSS Pricer program. Source code:

<https://www.cms.gov/PricerSourceCodeSoftware>

⁹ <https://www.cms.gov/Medicare/Coding/OutpatientCodeEdit/OCEQtrReleaseSpecs>

¹⁰ Since CAH outpatient claims have type of bill "85x", the IOCE software will not assign status indicator or APC code. In order to use the software properly, change the type of bill to "131" (the same bill type OPSS hospitals use to bill) before feeding the claims to the software.

¹¹ First digit of status indicator to be "F", "G", "H", "J", "K", "L", "P", "Q", "R", "S", "T", "U", "V", and "X".

- Estimate claim line cost by adding line covered charge and charges from packaged services
 - Line fixed threshold is the line OPSS payment plus the OPSS fix threshold of the calendar year
 - Line multiple threshold is line OPSS payment multiplied by the OPSS outlier factor of the calendar year
5. Aggregate claim line level payment to claim level and apply sequester reduction to calculate final PPS payment for CAHs.

Calculating Payment for Other Claim Lines

For all other paid claim lines with Status Indicator “A”, take their actual payment without adjustment.

SNF Payment Calculation Methodology

0. PPS Payment Calculation Formula for SNF PPS Claims

To apply SNF PPS payment rules to CAHs, the required inputs and formulas must be assessed. Under the SNF PPS, facilities are paid a predetermined daily rate for each day of SNF care. The daily rate is based on the HIPPS code (i.e., RUG-IV before FY2020 and PDPM since FY2020) assigned to the claim, which is determined by the SNF grouper software using patient assessment data as its input. SNFs paid via the SNF PPS are required to conduct patient assessment within a certain number of days after admission and submit the data to the CMS Minimum Dataset (MDS) database for payment calculation. Once daily rate is determined, claim payment is calculated as the number of covered days multiplied by the daily rate and geographic adjustment factor.

RUG Payment =

$$\text{RUG Rate} \times \text{Days} \times [(\text{Labor Share} \times \text{Wage Index}) + (1 - \text{Labor Share})] \times 2.28[\text{IF_AIDS}]$$

- *Days* is the number of covered days of the claim/stay;
- *Wage Index* is determined by the CBSA and/or Provider Specific File (PSF) record of the provider CCN.

PDPM Payment=

$$[(\text{BR}_{\text{PT}} \times \text{CMI}_{\text{PT}} \times \text{VPD Days}_{\text{PT}}) + (\text{BR}_{\text{OT}} \times \text{CMI}_{\text{OT}} \times \text{VPD Days}_{\text{OT}}) + (\text{BR}_{\text{SLP}} \times \text{CMI}_{\text{SLP}} \times \text{Days}) + (\text{BR}_{\text{NTA}} \times \text{CMI}_{\text{NTA}} \times \text{VPD Days}_{\text{NTA}}) + (\text{BR}_{\text{Nurs}} \times \text{CMI}_{\text{Nurs}} \times 1.18[\text{IF_AIDS}] \times \text{Days}) + (\text{BR}_{\text{Non Case-Mix}} \times \text{Days})] \times [(\text{Labor Share} \times \text{Wage Index}) + (1 - \text{Labor Share})]$$

- *BR* is the base rate for a given component;
- *CMI* is the case-mix index;
- *Days* is the number of covered days, unadjusted;
- *VPD Days* is the number of covered days, adjusted by VPD, based on the actual length of stay and the number of prior days of the CAH swing bed claim;
- *Wage Index* is determined by the CBSA and/or Provider Specific File (PSF) record of the provider CCN.

1. PPS Payment Calculation Formula for CAH Swing-Bed Claims

In order to estimate PPS payment to CAH swing-beds, we use the same formulas as above; however, the daily rate cannot be obtained directly. Unlike SNFs paid via the SNF PPS, CAH swing-beds are not required to conduct the assessment or submit the data to CMS due to their cost-based payment. Based on analyses, CAH swing-bed claims generally do not have corresponding MDS records. Therefore, HIPPS codes (for either RUG-IV or PDPM) and associated daily rates cannot be generated by running the SNF grouper software that takes assessment data as an input. Instead, we use predicted RUG/PDPM rate in the calculation, which is described in the next section.

Estimated RUG payment =
Predicted RUG Rate × Days × [(Labor Share × Wage Index) +
(1 - Labor Share)] × 2.28 [IF_AIDS]

- The *Predicted RUG Rates* are generated through the prediction models described below.

Estimated PDPM Payment =
Predicted Average Per-Diem PDPM Rate × Days × [(Labor Share × Wage Index) +
(1 - Labor Share)]

- The *Predicted Average Per-Diem PDPM Rates* account for case-mix, AIDS, and VPD adjustments and are generated through the prediction models described below.

2. RUG/PDPM Rate Prediction

The simplest prediction of RUG/PDPM rate is to use the average daily rate across all PPS-paid SNF claims. However, this prediction ignores the fact that the patient case-mix of CAH swing-beds is different from that of PPS-paid SNFs. To address this, we created a predictive model of RUG/PDPM per-diem-rates for CAH swing-bed claims, using PPS-paid claims.

We rely on one assumption as the basis of the prediction: the per-diem rate varies by the clinical conditions and severity of the patient. In order to gather the information, we take advantage of the 3-day qualifying inpatient stay rule (i.e., patients must have a medically necessary 3-day consecutive inpatient hospital stay for Medicare to cover the SNF benefit). By linking the qualifying inpatient hospital claim to the CAH swing-bed claims, we create the following model:

- Independent/Explanatory Variables:
 - MS-DRG code (and/or the corresponding DRG weight) of the qualifying inpatient stay
 - Length of the qualifying inpatient stay
 - HIV/AIDS diagnosis on the SNF claim, which increases the per-diem-rate under SNF PPS
 - Patient characteristics, such as age and gender
 - Length of SNF/swing-bed stay
- Dependent/Response Variable:
 - For RUG claims: RUG Rate
 - For PDPM claims:

$$\text{Average Per-Diem PDPM Rate} = \frac{\text{PDPM Payment}}{\text{Days}}$$

where *PDPM Payment* is calculated using the formula in Section 0 without the geographic adjustment factor, and *Days* is number of covered days.

- Estimation:
 - i. Method: Ordinary Least Squares (OLS)
 - ii. Training dataset:
 - RUG model: a random 60% sample of FY2019 (Oct 1st 2018 – Sep 30th 2019) claims
 - PDPM model: a random 60% sample of FY2020 (Oct 1st 2019 – Jan 26th 2020)¹² claims
 - iii. Validation dataset: use the remaining 40% of claims to test the predictive power
 - iv. Assessment metrics: goodness of fit, mean squared error, mean absolute error, etc.
 - v. Re-split the sample and repeat (i) through (iii) above
 - vi. Finalize estimation with full sample

3. SNF PPS Payment Calculation for 2019 CAH Swing-Bed Claims

- Apply the parameter estimates to CAH swing bed claims to predict their per-diem-rates
- Calculate PPS payment of CAH swing-bed claims with the formula in Section 1, using one of the methods below:
 - Apply RUG model for all CAH swing-bed claims with services dates in calendar year 2019
 - Apply PDPM model for all CAH swing-bed claims with services dates in calendar year 2019
 - Apply RUG model for claims with service dates between January 1, 2019, and September 30, 2019, and PDPM model for those with service dates between October 1, 2019, and December 31, 2019.
- Apply other payment adjustments as needed, such as the geographic adjustment.

¹² The COVID-19 PHE was declared on Jan 27, 2020. CMS later created a waiver for the 3-day-hospital-stay rule.