

PDPM Grouper JAR Package V2.2000

Centers for Medicare & Medicaid Services

October 1st, 2023

Table of Contents

| | |
|--------------------------------|---|
| Introduction | 2 |
| Disclaimer | 2 |
| Description | 2 |
| Interfacing with the JAR | 3 |
| Parameter Definitions | 3 |
| Errors | 4 |
| Test Data..... | 4 |
| Version History | 5 |
| DLL Version History | 5 |
| JAR Version History | 6 |
| Contact Information..... | 7 |

Introduction

This is the 12th revision to the initial release of the Patient-Driven Payment Model (PDPM) Grouper software. This is an update to the release V2.2000 of the PDPM Grouper as a Java Archive (JAR) library. A list of previous DLL and JAR versions will be maintained in the Version History section of this document.

Effective beginning October 1, 2019, the PDPM began to be used under the Skilled Nursing Facility (SNF) Prospective Payment System (PPS) for classifying SNF patients in a covered Part A stay.

Effective beginning October 1, 2020, the PDPM began to be used for OBRA assessments where A0310A = [01,02,03,04,05,06] and A0310B = [99] and target date was on or after October 1, 2020.

Please note the following:

- Use of the PDPM for OBRA assessment calculation is state-optional – each state must specify whether it requires the PDPM calculation for its OBRA's.
- FY2024 ICD-10 primary codes must be used for I0020B in these assessments.
- Also, FY2024 ICD-10 secondary codes must be used for the I8000A-J items in these assessments.

For detailed information on the PDPM logic, please visit <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/MDS30RAIManual.html> and refer to Chapter 6 in the latest version of the RAI Manual.

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Description

This package contains the Java source code as well as a compiled Java Archive (JAR) library.

NOTE: This package is intended for vendors/developers to include in their software.

Interfacing with the JAR

There are five public methods provided for use by other programs to pass MDS information into the PDPM grouper.

Method 1: *Pdpm.exec (String line)*

Method 2: *Pdpm.exec (SnfClaim claim)*

Method 3: *Pdpm.exec (File snfFile)*

Method 4: *Pdpm.stringExec (String line) //for C++ to call the jar*

Method 5: *Pdpm.exec (Path path, Consumer<SnfClaim> additionalPostProcessing) //for 32-bit JDK processing large data set*

Note: While there are five public methods, there are other protected methods with similar names and parameters that are used for testing and do not need to be used by end users for processing.

Descriptions of the necessary classes, methods, input parameters and return values are described below.

Parameter Definitions

| Class: Pdpm.java | | | |
|---------------------------|----------------|---------------------|---|
| Parameter Name | Parameter Type | Data Type | Description |
| line | Input | String | A 3690-byte fixed-length string containing an MDS assessment in the format defined by the MDS 3.0 Data Specifications V3.00.1, which went into production on October 1st, 2019. |
| claim | Input | SnfClaim | SnfClaim is a Java class contained in the PDPM Grouper JAR with fields to store the relevant inputs and outputs related to an MDS assessment. |
| snfFile | Input | File | A java.io.File containing one or more fixed-length strings containing MDS assessments. |
| path | Input | Path | A java.nio.file.Path for path to the input file |
| additionalPost Processing | Input | Consumer< SnfClaim> | Custom post processing result for low memory system (for java 32-bit JDK) |

| Class: SnfClaim.java | | | | |
|----------------------|-----|------------------|--|---|
| Parameter Name | I/O | Data Type | Method | Description |
| assessmentSystem | I | String | setAssessmentSystem | MDS Assessment System Code |
| birthdate | I | LocalDate | setBirthDate | java.time.LocalDate representing the birth date of the patient in the MDS assessment |
| admissionDate | I | LocalDate | setAdmissionDate | java.time.LocalDate representing the admission date of the patient in the MDS assessment |
| assessments | I | List<Assessment> | setAssessments(List), addAssessment(Assessment) | Quality measures of the patient in the MDS assessment consisting of: <ul style="list-style-type: none"> String – name String – item Integer – value boolean – isBlank boolean – isAssessed Assessment.java located in gov.cms.grouper.snf.model package. |
| dischargeDate | I | LocalDate | setDischargeDate | java.time.LocalDate representing the discharge date of the patient in the MDS assessment |

| Class: SnfClaim.java | | | | |
|-------------------------|-----|------------------------|--|---|
| Parameter Name | I/O | Data Type | Method | Description |
| assessmentReferenceDate | I | LocalDate | setAssessmentReferenceDate | java.time.LocalDate representing the assessment reference date (target date) of the patient in the MDS assessment |
| primaryDiagnosis | I | SnfDiagnosisCode | setPrimaryDiagnosis | Primary diagnosis of the MDS assessment consisting of: <ul style="list-style-type: none"> String – value String – clinicalCategory String – speechCategory String - nutritionalCategory SnfDiagnosisCode.java located in gov.cms.grouper.snf.model package. |
| obra | I | Integer | setObra | The OBRA value on the MDS assessment |
| secondaryDiagnoses | I | List<SnfDiagnosisCode> | setSecondaryDiagnoses(List), addSecondaryDiagnosis(SnfDiagnosisCode) | The secondary diagnoses of the MDS assessment consisting of: <ul style="list-style-type: none"> String – value String – clinicalCategory String – speechCategory String - nutritionalCategory SnfDiagnosisCode.java located in gov.cms.grouper.snf.model package. |
| hippsCode | O | String | getHippsCode | The resulting 5-character HIPPS Code returned by the method. |
| errors | O | List<String> | getErrors | A java.util.List of Strings comprised of an error number and the error description. If no errors were encountered in the processing then the list will be empty. |
| version | O | Int | getVersion | An int representing the current component version of the PDPM grouper used to calculate the HIPPS Code. |

In addition to retrieving the output from the SnfClaim object via the output methods listed above, the fixed length MDS string, including calculated HIPPS code and version, can be retrieved by passing the processed claim into `Pdpm.getClaimFixedString(SnfClaim snfClaim)`.

Errors

Each SnfClaim object can store a List<String> of errors. Multiple errors can exist on the same SnfClaim object. The list of possible errors is contained in the table below.

| Error String | |
|--------------|--|
| 0) | "Assessment reference date is missing or is invalid: <value>" |
| 1) | "Invalid A0310A: <value> or A0310B: <value>" |
| 2) | "Line length is less than 3688 bytes (<value>); PDPM Grouper unable to process further." |
| 3) | "Unknown process error: <message>" |

Test Data

Test submission data files have been provided in the zip file "PDPM_V220_Test_Data.zip", so that vendors may confirm that their software is generating the correct results. The correct PDPM score and version for each assessment are stored in Z0100A (positions 1344-1350 of the assessment fixed-length string) and Z0100B (positions 1351-1360 of the assessment fixed-length string).

Version History

DLL Version History

| Version | Comments |
|---------|---|
| 1.0000 | This was the initial production release. |
| 1.0001 | <p>This was a jRAVEN-only release, and not available separately. It resolved the following issues:</p> <ul style="list-style-type: none"> - In the method BehavioralSymptomsStep2 the value of 0 was treated as a not assessed/not complete. As a result the staff assessment was being used to determine cognitive performance. - The ConversionFunctionTwoDigit function was not handling the “-” and “^” characters, which was resulting in the default 0 being returned. - When determining the NTA score for number of “Stage 4 Unhealed Pressure Ulcer Currently present” the value must be greater than 0. The method DetermineUnhealedPressure only checked for a value of 1. |
| 1.0002 | <p>This was the second production release. It resolved the following issues:</p> <ul style="list-style-type: none"> - The code “CheckImpairment = (ImpairIndicate1, ImpairIndicate2)” was incorrect, and was modified to be “CheckImpairment = CheckImpair(ImpairIndicate1, ImpairIndicate2).” - There are 20 ICD codes that can score under multiple conditions for the NTA component. The PDPM code was only allowing those ICD codes to score once. |
| 1.0003 | <p>This was the third production release. It resolved the following issues:</p> <ul style="list-style-type: none"> - SLP Category: Modified logic to account for [S020XXD] in I0020B when Non-Orthopedic Surgery eligible and the patient has had a recent surgery that is a non-orthopedic Surgery. - SLP Category: Modified the logic to account for [S34111D] in I0020B when Orthopedic Surgery eligible and the patient has NOT had a recent surgery. - Cognitive Level: Modified the code so that it applies logic to look for “1” in B0100 instead of looking for “01”. - In the event an ICD10 code was not found in the applicable list for item I0020B, the method DeterminePrimaryDiagnosis returned an index of 0, which was incorrectly indicating the code “A000” and, therefore, the clinical category “Acute Infections” instead of being handled as a “Return to Provider.” It was modified to return -1. |
| 1.0004 | This is the fourth production release. It adds support for the new COVID-19 ICD-10-CM code, U07.1, which is a valid code for use with MDS assessments with target date on or after April 1, 2020. |
| 1.0005 | <p>This was the BETA for the fifth production release. It supported calculation of HIPPS codes for assessments with A0310A = [01,02,03,04,05,06] and A0310B = [99]. It DID NOT contain support for FY2021 ICD-10 codes, which will be used with MDS assessments with target date on or after October 1, 2020. For the BETA, FY2020 codes were used for all MDS assessments.</p> <p>Note that the BETA documentation indicated that the Version value was 1.0005B; however, the DLL was actually returning 1.0005. Therefore, it was decided to increment the product version to 1.0006.</p> |
| 1.0006 | <p>This was the sixth release (fifth production release, since 1.0005 was a beta release). As with the previous beta release, it supported calculation of HIPPS codes for assessments with A0310A = [01,02,03,04,05,06] and A0310B = [99]. It also contained support for FY2021 ICD-10 codes, which must be used for MDS assessments with target date on or after October 1, 2020.</p> <p>IMPORTANT NOTE: The I8000A-J items began to be versioned in the grouper. Therefore, FY2021 ICD-10 codes must be used for the I8000A-J items for MDS assessments with target date on or after October 1, 2020.</p> |

| Version | Comments |
|---------|--|
| 1.0007 | <p>This is the seventh release (sixth production release, since 1.0005 was a beta release). This release adds six ICD-10 codes that were inadvertently excluded from the NTA calculation in V1.0006:</p> <ul style="list-style-type: none"> • T8484XA • T8389XA • T8321XA • T82399A • T82392A • T83021A |
| 1.0008 | <p>This is the eighth release (seventh production release, since 1.0005 was a beta release). This release corrects an issue with a dynamic array that was not consistently reinitialized when processing multiple assessments within a short time frame. This occasionally caused incorrect PDPM recalculation results when processing pre- and post- 10/01/2020 assessments.</p> |
| 1.0009 | <p>This is the ninth release (eighth production release, since 1.0005 was a beta release). This release adds support for new ICD-10 codes that can be used for assessments with target date of January 1, 2021 and later: Z11.52, Z20.822, Z86.16, M35.81, M35.89 and J12.82. Note that one ICD-10 code that was already in production, M35.8, will not be allowed in assessments with target date on or after January 1, 2021, since it is replaced by the two new codes, M35.81 and M35.89.</p> <p>UPDATE: In addition, there were three sets of NTA Comorbidity mappings that were incorrect for ICD-10 changes made on 10/01/2020. The following corrections were made:</p> <ol style="list-style-type: none"> 1. Immune Disorders (RxCC97): D848 removed; D8481, D84821, D84822, D8489 added. 2. Pulmonary Fibrosis and Other Chronic Lung Disorders (RxCC227): J8417 removed; J84170, J84178 added. 3. Complications of Specified Implanted Device or Graft (RxCC176): T86842 removed; T868421, T868422, T868423, T868429 added. |

JAR Version History

| Version | Comments |
|-----------------|--|
| 2.0000_B ETA | <p>This is the first public version of the JAR. It is released as a beta version which replicates the DLL v1.0009 functionalities and underlying logic. It DOES NOT contain support for FY2022 ICD-10 codes, which will be used with MDS assessments with target date on or after October 1, 2021. For the BETA, FY2021 codes were used for all MDS assessments.</p> |
| 2.0000 | <p>This is the second release of the JAR. It contains support for FY2022 ICD-10 codes which are used with MDS assessments with a target date on or after October 1, 2021. This release supports processing of records back to v1.0003, with a target date on or after October 1, 2019.</p> <p>UPDATE: In addition, there were logic updates to the NTA Comorbidity Score Calculation. Item M1040B has now been combined with M1404A and M1400C; now when any of these three MDS items is present, it adds one point, at most, to the total NTA score.</p> |
| 2.0001 | <p>This is the third release of the Jar (second production release). This release resolved the following issues:</p> <ul style="list-style-type: none"> - Correction of a logic issue on “Behavioral Symptoms and Cognitive Performance” under Nursing payment component. When C0100 and C0500 are both dashes (not assessed), the grouper returned an incorrect nursing classification. |

| Version | Comments |
|---------|--|
| | <ul style="list-style-type: none"> - NTA comorbidity score calculation issue fixed. It was calculating I8000: End-Stage Liver Disease and I8000: Immune Disorders as 2 points each but those should only count as 1 point each. |
| 2.0002 | <p>This is fourth release of the Jar (third production release). This release resolved the following issues:</p> <ul style="list-style-type: none"> - Diagnosis code mapping to NTA comorbidities could have 1 to 2 mappings. Before only 1 to 1 mappings were captured from the PDPM_ICD10_Mappings_FY20XX excel sheet. List of diagnosis codes updated: D89810, D89811, D89812, D89813, K7041, M3211, M3213, M3301, M3311, M3321, M3391, M3481, T8630, T8631, T8632, T8633, T8639, Z48280, Z943 - NTA comorbidity description fix for "Disorders of Immunity - Except: RxCC97: Immune Disorders". Previous incorrect spacing in the description resulted in point not adding up correctly during NTA comorbidity score calculation. |
| 2.0003 | <p>This release updated the Log4j library to version 2.17.1 to patch some security vulnerabilities that was found with that library.</p> <p>No changes to PDPM logic.</p> |
| 2.1000 | <p>This release was updated to support FY2023 ICD-10 codes which are used with MDS assessments with a target date on or after October 1, 2022.</p> <p>UPDATE:</p> <ol style="list-style-type: none"> 1) When the ICD-10 code in item I0020B (Primary Medical Condition) has a Clinical Category of "Return to Provider", the RECALCULATED_Z0100A (recalculated HIPPS code) will not be output for 5-day or IPA assessments, but will still be output for OBRA assessments, as long as the ICD-10 code is a valid code. 2) Jars are packaged differently (snf-x.x.x-jar-with-dependencies removed). Instead, jars in the "lib" folder should be included on the classpath to avoid compilation issues (refer to snf.bat). 3) The software now uses a Protobuf bin file in place of the original/plain CSV files for processing; however, to maintain consistency, we are still providing the corresponding CSV files in the src\main\resources\specTableCSV folder. |
| 2.2000 | <p>This release was updated to support FY2024 ICD-10 codes which are used with MDS assessments with a target date on or after October 1, 2023.</p> <p>This release was also updated to support the following MDS Items (left) being changed to new MDS Items (right):</p> <p>D0300 -> D0160</p> <p>K0510A1 -> K0520A2</p> <p>K0510A2 -> K0520A3</p> <p>K0510B1 -> K0520B2</p> <p>K0510B2 -> K0520B3</p> <p>K0510C2 -> K0520C3</p> <p>O0100A2 -> O0110A1B</p> <p>O0100B2 -> O0110B1B</p> |

| Version | Comments |
|---------|---|
| | O0100C2 -> O0110C1B O0100D2 -> O0110D1B O0100E2 -> O0110E1B O0100F2 -> O0110F1B O0100H2 -> O0110H1B O0100I2 -> O0110I1B O0100J2 -> O0110J1B O0100M2 -> O0110M1B Zip file PDPM_V2.2000_INTERNAL_DATA.zip created to store the internal data of the component. They will no longer reside in src\main\resources\specTableCSV. |

Contact Information

Please report any issues by contacting the Grouper Support team, using the following email address:
GrouperBetaTesting@cms.hhs.gov.