HHA PPS Grouper Version 0201: Logic & Pseudocode

1. Introduction

CMS has announced changes to the Medicare Home Health Prospective Payment System (HH PPS) that will improve the accuracy of payments to home health agencies for services they furnish to Medicare beneficiaries. A Notice of Proposed Rulemaking (NPRM), CMS-1541-P, was published in the Federal Register on May 4, 2007, and the Final Rule, CMS-1541-F, was published on August 29, 2007. This Rule includes a number of refinements that will update the current case-mix model to reflect more accurately the resources associated with certain types of episodes. While the basic logic of the new classification algorithm is laid out in the Final Rule, this document presents more detail on the logic of the new classification algorithm to help software vendors who may wish to develop their own classification software.

Note that the actual .DLL software, as well as this pseudocode, are "backward-compatible," in that they incorporate the classification logic of all previous versions of the Grouper. However, the new version outputs 4 parameters rather than 3 for all assessments:

2. Modifications under Version 2.01: Grouper Outputs

(1) HIPPS code - modified:
Due to the changes in the classification algorithm, the format and composition of the HIPPS code has been revised. The new version of the HIPPS code does NOT include the "data validity flag" that appeared in the previous versions, because all five characters of the code are now used for the HHRG (4) and the nonroutine supplies (NRS) group (1). However, the Grouper will still be applying certain range and logic checks to the data used for grouping, and it will not give "credit" for an ICD-9-CM diagnosis code that is incomplete or improperly sequenced, or if a problem with a particular other variable or skip pattern is identified. (A new separate data validity flag will alert the user to these problems – see below.)

(2) Data Validity Flag - modified:
In the previous Grouper versions, the data validity flag was the final character of the HIPPS code. Since there is no room in the version 02.01HIPPS code for the flag, it is being output as a separate parameter. In addition, it has been expanded from 8 values to 16 in order to alert providers separately to problems in the sequencing of diagnosis codes (causing them to go unrecognized for scoring.) The way in which the new validity flag will appear and be stored may vary from software package to package. HAVEN will screen-display the flag upon producing the HIPPS code for each record input, but the flag will not be stored in the local data base.
(3) Treatment Authorization (Claim-OASIS Matching String) - modified:
The format of the 18-character claim-OASIS matching string (entered in the "Treatment Authorization" field on HHA claims) has also been modified due to changes in the classification algorithm. This string will now be used on the Medicare claim not only (a) to identify the specific OASIS assessment used the generate the HIPPS code, but also (b) to store OASIS information needed to generate a corrected HIPPS code as required based on corrections to service-based classification variables during claims processing. In order to fit all the required information into the same 18 characters, many of the variables are transformed into alphanumeric codes (letters) in order to use the fewest possible characters. Because the new information contained in this string may be needed for calculating payment, its presence on the claim in a valid format will now be required for final episode claims to be paid.

(4) Grouper Version – updated:
The new version is 02.01.

3. Modifications under Version 2.01: the OASIS Protocol

Version 02.01 recognizes that the OASIS data collection protocol was updated (to version 1.60), adding/modifying items used for case mix classification:

M0110 - Episode Timing (new item added)

M0246 – Case-mix diagnoses (optional) (expands and replaces M0245)
M0826 - Number of therapy visits (replaces M0825)

and changing data collection points for several others:

M0175 - no longer collected on followup & recertification assessments (M0100=04 or 05)
M0470 - now REQUIRED on followup & recertification assessments (M0100=04 or 05)
M0474 - now REQUIRED on followup & recertification assessments (M0100=04 or 05)
M0520 - now REQUIRED on followup & recertification assessments (M0100=04 or 05)
M0610 - no longer collected on followup & recertification assessments (M0100=04 or 05)
M0800 - now REQUIRED on followup & recertification assessments (M0100=04 or 05)

4. Modifications under Version 2.01: Treatment of Diagnoses

Data checks on diagnoses: The checks applied to the diagnosis-related OASIS items are different from those in the OASIS Data Specifications. The screens applied to these variables require:

(a) that a primary diagnosis code is entered;

Range checks:

(b) that the primary diagnosis is not an "E-code" and that none of the three characters to the left of the decimal point is non-numeric other than V in the third place to the left of the decimal point in M0230_PRIMARY_DIAG_ICD and or a "V" or "E" in the first character of M0240_OTH_DIAGn_ICD);
(c) that all the necessary digits are entered for any code which falls in a three-digit code family where, for Grouper purposes, CMS requires the 4th and/or 5th digit (e.g., 4th and/or 5th digit may be required to determine whether certain codes can be used for assigning the primary diagnosis);
(d) that the diagnosis code used for case-mix classification is a valid diagnosis code for the federal fiscal year (FFY) in which the assessment was completed (according to M0090_INFO_COMPLETED_DT, [Date Assessment Completed]); and

Sequencing checks:

(e) that a case-mix diagnosis code which can only be entered as a secondary diagnosis according to ICD-9-CM coding guidelines is not entered as the primary diagnosis;
(f) that a "secondary-only" or manifestation code case-mix diagnosis (i.e., a diagnosis code that requires multiple coding under ICD-9-CM coding rules) follow an appropriate etiology or underlying condition code, NOT another secondary-only case-mix code or a V- or E-code. (For purposes of Grouper logic checks, "secondary-only" or manifestation codes are those that appear flagged with an "M" in Tables 1 and 6 in the Appendix, and "appropriate etiology or underlying conditions" are defined for each manifestation code in Table 3 in the Appendix.)

The Grouper software and this pseudocode cannot check the responses on these items against *all* possible ICD-9-CM diagnosis codes to assure that they are valid ICD-9-CM diagnosis codes; rather, they focus on the codes used for case-mix assignment.

V-codes and case-mix diagnosis fields: In the fields for case-mix diagnosis (M0246), the Grouper:

(g) will ignore E-codes and V-codes;
(h) will acknowledge a diagnosis in column 3 in a given row ONLY if there is a V-code which potentially replaces a case-mix diagnosis in the second column of that same row (for allowable V-codes, see Table 4 in the Appendix); and
(i) will acknowledge a diagnosis in column 4 of a given row ONLY if (1) there is a Table 4 V-code in the second column of that same row AND (2) the code in column 4 is a secondary-only code or other code that requires a preceding etiology or other "code first" situation (as defined in "Table 1: Diagnosis Codes, "Secondary-Only" Diagnosis Code, Diagnosis Groups, And Diagnosis Group Variable Numbers" in the Appendix AND (3) the code in column 3 is defined as an appropriate etiology for the manifestation code entered in column 4. (Appropriate etiologies are listed in Table 3 in the Appendix.)

Special treatment of certain V-codes: In version 02.01, for the first time there are three V-codes (V55.0, V55.5 and V55.6) that are case-mix diagnoses, that is, they can earn points for an episode (See Tables 1 and 5 in the Appendix.) These codes are treated specially for sequencing and scoring purposes: If one of these three V-codes appears in M0230a or M0240x, the Grouper will not consider or score any entries in M0246x3 and M0246x4 on the same row.

(Note that columns 3 and 4 (M0246x3 and M0246x4) in item M0246 are optional and entering of a V-code in M0230/M0240 does *not* require that columns 3 and 4 be completed on that row.

Scoring multiple diagnoses: Diagnoses are treated differently for scoring purposes in Grouper 02.01 than in earlier versions. Every valid case-mix diagnosis code that is reported has the opportunity to earn points for classification purposes. (In previous Grouper versions, an episode could earn points for the primary diagnosis only.) However, the episode can earn the points for a diagnostic group only once (even if several of its diagnoses fall in the same group.) If the primary diagnosis and one of the "other" diagnoses fall into a diagnostic group where there are separate numbers of points to be earned for primary and other diagnosis (e.g., diabetes), the episode will receive only the points due for a primary diagnosis.

Scoring when a manifestation code and its etiology each potentially earn points in different diagnosis groups: Finally, if a manifestation and its appropriate etiology both potentially earn points (in different diagnostic categories), only the code earning the higher number of points for the episode is recognized and scored. This "contention" will be decided based on the total number of points earned by each diagnosis, including points earned based on the presence of coexisting conditions within the episode. As noted above, if an episode has earned points in a diagnosis group once, it cannot earn them again via another lower-listed diagnosis. However, if the first occurrence of the diagnosis did not earn the points in its diagnosis group because it was the "losing" contender in etiology/manifestation contention, any lower occurrence of another diagnosis code in the same (losing) diagnosis group COULD potentially earn those points for the episode.

5. Modifications under Version 2.01: Scoring

The new case-mix model classifies each assessment into one of four scoring equations, based on whether it is an "early" or "later" episode in a series of adjacent episodes, and whether the care plan indicates a need for at least 14 therapy visits. (The new items M0110 and M0826 have been added to the OASIS assessment to capture the information needed for this classification.)

Assignment to Scoring Equation				
Episode Timing (M0110)	01 or UK ("Early")		02 ("Later")	
Therapy visits (M0826)	0-13	14+	0-13	14+
SCORING EQUATION:	1	2	3	4

The OASIS responses are scored differently under each scoring equation, i.e., the very same set of OASIS responses will generate different point scores (and a different HIPPS code) depending on which equation is used.

Although the Medicare claim will be submitted to Medicare with the HIPPS code based on the submitted values for M0110 and M0826, it is possible that changes to casemix information could occur during claims processing. For example, the CWF may re-classify an episode submitted as "later" to be an "early" one, or medical review may deny some therapy visits – changes that could move the episode to a different scoring equation. In these cases, the Pricer needs to be able to assign an updated HIPPS code, but it does not have the OASIS

assessment available to use for rescoring. To avoid having to send the claim back to the provider (RTP), the Grouper will generate four sets of OASIS scores, one set using the algorithm for each scoring equation. These values will be output by the Grouper in the modified (Claim-OASIS Matching String) and stored on the claim in the "Treatment Authorization" field (FL63) in case they are needed during claims processing.

In order to generate these four sets of scores, certain parts of the scoring logic must be repeated four times, once for each equation. These sections are not shown four times in the pseudocode, but are indicated by variables which include "SE" (for scoring equation) in their names. These variables will actually need to be created four times, once for each equation.

6. **Modifications under Version 2.01: Nonroutine Medical Supplies (NRS)**

Under version 2.01, a separate classification algorithm is used to classify episodes for separate payments for nonroutine medical supplies (NRS). The NRS model uses diagnoses and clinical information from the OASIS assessment to assign points to the episode, which can then then placed into one of 6 NRS severity levels; the 5-th character of the HIPPS code is the NRS severity level. . While the process is similar to that used in the main casemix model, the variables are used differently. Also, the NRS model is applied to all episodes in the same way, there is no separate scoring based on episode timing or receipt of therapy visits as in the main model.

7. **Modifications under Version 2.01: Transition Issues**

The new Grouper applies to Medicare home health payment episodes starting January 1, 2008 or later. Since episode start date is not recorded on the OASIS, the effective date of Grouper 02.01 is based on assessment completion date (M0090_INFO_COMPLETED_DATE.)

If reason for assessment (M0100_ASSMT_REASON) = 01 or 03 (start/resumption of care), Grouper 02.01 will be effective for assessments with M0090_INFO_COMPLETED_DATE on or after 2008-01-01.

To allow for completion of recertification assessments during the 5-day window before the next episode begins, if reason for assessment (M0100_ASSMT_REASON) = 04 or 05 (recertification/other followup), Grouper 02.01 will be effective for assessments with M0090_INFO_COMPLETED_DATE on or after 2007-12-27.

NB: The effective date of the Final Rule, CMS-1541-F, is January 1, 2008. Therefore, the logic above does not cover ALL situations, and in some cases it is anticipated that providers or RHHIs may need to generate the HIPPS code manually or develop other workarounds. For example, an assessment with M0100_ASSMT_REASON=04 or 05, M0090 assessment completed date = 12/27/2007, and episode start date = 12/31/2007 would need to use an "old" grouper (version 01.06), but the new software will produce a new (Grouper 02.01) classification because the assessment date is on/after 12/27/2007.

In these cases, a manual workaround will be necessary. HHAs will need to temporarily enter an M0090 date prior to 12/27/2007, run the Grouper software to calculate the HIPPS code and treatment authorization code needed for the claim. Any valid date prior to 12/27/2007 may be used since the purpose is only to create the information needed for the claim. The HHA will then need to correct the date prior to submission of the OASIS assessment to the State and the date temporarily entered to get the HIPPS code will not become part of their permanent OASIS records.]

Questions about the Grouper software & classification logic may be directed via email to grouper0201@homehealthgrouper.info.

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8. Define Input Variables:

LOCATION	*FIELD NAME*
177-178	M0030_START_CARE_YR12
179-180	M0030_START_CARE_YR34
181-184	M0030_START_CARE_MMDD
302-303	M0090_INFO_COMPLETED_YR12
304-305	M0090_INFO_COMPLETED_YR34
306-309	M0090_INFO_COMPLETED_MMDD
310-310	M0100_ASSMT_REASON1
311-311	M0100_ASSMT_REASON2
404-410	M0230_PRIMARY_DIAG_ICD
413-419	M0240_OTH_DIAG1_ICD
422-428	M0240_OTH_DIAG2_ICD
431-437	M0240_OTH_DIAG3_ICD
440-446	M0240_OTH_DIAG4_ICD
449-455	M0240_OTH_DIAG5_ICD
458-458	M0250_THH_IV_INFUSION
459-459	M0250_THH_PAR_NUTRITION
460-460	M0250_THH_ENT_NUTRITION
461-461	M0250_THH_NONE_ABOVE
529-530	M0390_VISION
535-536	M0420_FREQ_PAIN
538-538	M0440_LESION_OPEN_WND
539-539	M0445_PRESS_ULCER
540-541	M0450_NBR_PRSULC_STG1
542-543	M0450_NBR_PRSULC_STG2
544-545	M0450_NBR_PRSULC_STG3
546-547	M0450_NBR_PRSULC_STG4
548-548	M0450_UNOBS_PRSULC
549-550	M0460_STG_PRBLM_ULCER
553-553	M0468_STASIS_ULCER
554-555	M0470_NBR_STASULC
556-556	M0474_UNOBS_STASULC
557-558	M0476_STAT_PRB_STASULC
559-559	M0482_SURG_WOUND
560-561	M0484_NBR_SURGWND
563-564	M0488_STAT_PRB_SURGWND
565-566	M0490_WHEN_DYSPNEIC
573-574	M0520_UR_INCONT
577-578	M0540_BWL_INCONT
579-580	M0550_OSTOMY
616-617	M0650_CUR_DRESS_UPPER
620-621	M0660_CUR_DRESS_LOWER
624-625	M0670_CUR_BATHING
628-629	M0680_CUR_TOILETING
632-633	M0690_CUR_TRANSFERRING
636-637	M0700_CUR_AMBULATION
676-677	M0800_CUR_INJECT_MEDS

779-780	M0110_EPISODE_TIMING
781-787	M0246_PMT_DIAG_ICD_A3
788-794	M0246_PMT_DIAG_ICD_B3
795-801	M0246_PMT_DIAG_ICD_C3
802-808	M0246_PMT_DIAG_ICD_D3
809-815	M0246_PMT_DIAG_ICD_E3
816-822	M0246_PMT_DIAG_ICD_F3
823-829	M0246_PMT_DIAG_ICD_A4
830-836	M0246_PMT_DIAG_ICD_B4
837-843	M0246_PMT_DIAG_ICD_C4
844-850	M0246_PMT_DIAG_ICD_D4
851-857	M0246_PMT_DIAG_ICD_E4
858-864	M0246_PMT_DIAG_ICD_F4
865-867	M0826_THER_NEED_NUM
868-868	M0826_THER_NEED_NA

9. Initialize Working and Output Variables, Assign Values:

Set GROUPER0201 = 0

Set HIPPS_SCORING_EQUATION=0
Set GROUPING_STEP=0

[Data Validity Flags]

Set M0090_INFO_COMPLETED_DT_INVLD= 0
Set M0110_EPISODE_TIMING_INVLD=0

Set M0250_THERAPIES_INVLD =0
Set M0250_INTERNAL_LOGIC_INVLD= 0
Set M0390_VISION_INVLD = 0
Set M0420_PAIN_INVLD = 0
Set M0440_LESION_INVLD = 0
Set M0450_NPRSULC1_INVLD = 0
Set M0450_NPRSULC2_INVLD = 0
Set M0450_NPRSULC3_INVLD = 0
Set M0450_NPRSULC4_INVLD = 0
Set M0450_UNOBS_PRSULC_INVLD = 0
Set M0460_STGPRSUL_INVLD = 0
Set M0470_NBR_STASULC_INVLD=0
Set M0474_UNOBS_STASULC_INVLD=0
Set M0476_STATSTASIS_INVLD = 0
Set M0488_STATSURG_INVLD = 0
Set M0490_DYSPNEIC_INVLD = 0
Set M0520_UR_INCONT_INVLD = 0
Set M0540_BWLINCONT_INVLD = 0
Set M0550_OSTOMY_INVLD = 0
Set M0650_660_CUR_DRESS_INVLD = 0
Set M0670_CUR_BATHING_INVLD = 0
Set M0680_CUR_TOILETING_INVLD = 0
Set M0690_CUR_TRANSFER_INVLD = 0
Set M0700_CUR_AMBULATION_INVLD = 0

Set M0800_CUR_INJECT_MEDS_INVLD=0
Set M0826_THER_NEED_INVLD=0

Set MANIFESTATION_SEQUENCING_FLAG=0
Set CLINICAL_DOMAIN_DATA_ISSUE_FLAG = 0
Set FUNCTIONAL_DOMAIN_DATA_ISSUE_FLAG = 0
Set SERVICE_DOMAIN_DATA_ISSUE_FLAG = 0

[Diagnosis and scoring variables – main model]

Create a series of 18-member arrays, with each member representing one of the 18 OASIS diagnosis code fields in this order:

1	M0230a: M0230_PRIMARY_DIAG_ICD		7	M0246a3: M0246_PMT_DIAG_ICD_A3		13	M0246a4: M0246_PMT_DIAG_ICD_A4
2	M0240b" M0240_OTH_DIAG1_ICD		8	M0246b3: M0246_PMT_DIAG_ICD_B3		14	M0246b4: M0246_PMT_DIAG_ICD_B4
3	M0240c" M0240_OTH_DIAG2_ICD		9	M0246c3: M0246_PMT_DIAG_ICD_C3		15	M0246c4: M0246_PMT_DIAG_ICD_C4
4	M0240d: M0240_OTH_DIAG3_ICD		10	M0246d3: M0246_PMT_DIAG_ICD_D3		16	M0246d4: M0246_PMT_DIAG_ICD_D4
5	M0240e: M0240_OTH_DIAG4_ICD		11	M0246e3: M0246_PMT_DIAG_ICD_E3		17	M0246e4: M0246_PMT_DIAG_ICD_E4
6	M0240f: M0240_OTH_DIAG5_ICD		12	M0246f3: M0246_PMT_DIAG_ICD_F3		18	M0246f4: M0246_PMT_DIAG_ICD_F4

The first 4 arrays are independent of the scoring equations used to assign points:

Array A: ICD9_Start(1-18) (the field's starting position on the OASIS record)
Array B: ICD9_Skip(1-18) (binary field indicating field will not contribute points)
Array C: ICD9_Manifest(1-18) (binary field indicating a manifestation ICD-9 code)
Array D: ICD9_DG(1-18) (the number, 1-22, of the diagnosis group of this ICD-9)

Then there are two sets of arrays capturing score and primary/other status of each of the 18 diagnoses under each of the 4 scoring equations (SE):

Arrays E1-E4: ICD9_PointsSE[1-4](1-18) (number of clinical points generated by this ICD-9 code, given the scoring equation used (SE) and the other diagnosis codes and OASIS responses present)
Arrays F1-F4: ICD9_PDXSE[1-4](1-18) (binary field indicating this is the primary diagnosis under this scoring equation)

Initialize ICD9_Start(1-18) to the values { 404,413,422,431,440,449,781,788,795,802, 809,816,823,830,837,844,851,858 }.
Initialize the remaining arrays to zero.

Finally, create and initialize to zero:

Array G: Diag_GrpsSE(1-22), a 22-member array of binary fields representing the diagnosis groups under this scoring equation (SE) in this order:

DG No.	Diagnosis Group
1	Blindness and low vision
2	Blood disorders
3	Cancer and selected benign neoplasms
4	Diabetes
5	Dysphagia
6	Gait Abnormality
7	Gastrointestinal disorders
8	Heart Disease
9	Hypertension
10	Neuro 1 - Brain disorders and paralysis
11	Neuro 2 - Peripheral neurological disorders
12	Neuro 3 – Stroke
13	Neuro 4 - Multiple Sclerosis
14	Ortho 1 - Leg Disorders
15	Ortho 2 - Other Orthopedic disorders
16	Psych 1 - Affective and other psychoses, depression
17	Psych 2 - Degenerative and other organic psychiatric disorders
18	Pulmonary disorders
19	Skin 1 -Traumatic wounds, burns and post-operative complications
20	Skin 2 - Ulcers and other skin conditions
21	Tracheostomy care
22	Urostomy/Cystostomy Care

(Create score variables for each scoring equation.)

Create Clin_Score1 = 0
Create Clin_Score2 = 0
Create Clin_Score3 = 0
Create Clin_Score4 = 0
Create Func_Score1 = 0
Create Func_Score2 = 0
Create Func_Score3 = 0
Create Func_Score4 = 0\

Diagnosis and scoring variables – NRS model]

For scoring the diagnoses for the NRS model, create an additional series of 6, 18-member arrays representing the 18 OASIS diagnosis code fields in this order:

1	M0230a: M0230_PRIMARY_DIAG_ICD		7	M0246a3: M0246_PMT_DIAG_ICD_A3		13	M0246a4: M0246_PMT_DIAG_ICD_A4
2	M0240b" M0240_OTH_DIAG1_ICD		8	M0246b3: M0246_PMT_DIAG_ICD_B3		14	M0246b4: M0246_PMT_DIAG_ICD_B4
3	M0240c" M0240_OTH_DIAG2_ICD		9	M0246c3: M0246_PMT_DIAG_ICD_C3		15	M0246c4: M0246_PMT_DIAG_ICD_C4
4	M0240d: M0240_OTH_DIAG3_ICD		10	M0246d3: M0246_PMT_DIAG_ICD_D3		16	M0246d4: M0246_PMT_DIAG_ICD_D4

5	M0240e: M0240_OTH_DIAG4_ICD		11	M0246e3: M0246_PMT_DIAG_ICD_E3		17	M0246e4: M0246_PMT_DIAG_ICD_E4
6	M0240f: M0240_OTH_DIAG5_ICD		12	M0246f3: M0246_PMT_DIAG_ICD_F3		18	M0246f4: M0246_PMT_DIAG_ICD_F4

Array NRS-A: NRS-ICD9_Start(1-18) (the field's starting position on the OASIS record)
Array NRS-B: NRS-ICD9_Skip(1-18) (binary field indicating field will not contribute points)
Array NRS-C: NRS-ICD9_Manifest(1-18) (binary field indicating a manifestation ICD-9 code)
Array NRS-D: NRS-ICD9_DG(1-18) (the number, 1-12, of the diagnosis group of this ICD-9)
Array NRS-E: NRS-ICD9_Points(1-18) (number of points generated by this ICD-9 code, given the diagnosis code and OASIS responses)
Array NRS-F: NRS-ICD9_PDX(1-18) (binary field indicating this is the primary diagnosis)

Initialize NRS-ICD9_Start to the values { 404,413,422,431,440,449,781,788,795,802, 809,816,823,830,837,844,851,858 }.

Initialize the remaining arrays to zero.

In addition, create and initialize to zero:

Array NRS-G: NRS-Diag_Grps(1-12), a 12-member array of binary fields representing the NRS diagnosis groups in this order:

NRS DG No.	NRS Diagnosis Group
1	Anal fissure, fistula and abscess
2	Cellulitis and abscess
3	Diabetic Ulcers
4	Gangrene
5	Malignant neoplasms of skin
6	Non-pressure and non-stasis ulcers (other than diabetic)
7	Other infections of skin and subcutaneous tissue
8	Post-operative Complications
9	Traumatic wounds, burns and post-operative complications
10	V-code, Cystostomy Care
11	V-code, Tracheostomy Care
12	V-code, Urostomy Care

Create NRS_Selected_Skin_Conditions_Score=0
Create NRS_Score = 0

[Initializing Grouper 02.01 Outputs]

[Constructing the HIPPS code:]

Set HIPPS_1= 0
Set HIPPS_2= 0
Set HIPPS_3= 0
Set HIPPS_4= 0
Set HIPPS_5= 0

Set HIPPS = BLANK

[Data Validity Flag, Grouper Version:]

Set DATA_VALIDITY_FLAG = BLANK

Set GROUPER_VERSION_NUMBER = 02.01

[Claim-OASIS Matching String:]

Set CLAIM_OASIS_STRING = BLANK
Set M0030_YY = 0
Set M0030_JULIAN_CODE = 0
Set M0090_YY = 0
Set M0090__JULIAN_CODE = 0
Set M0100_1 = 0
Set M0110_1_2 = 0
Set CLIN_SCORE1_CD = 0
Set FUNC_SCORE1_CD = 0
Set CLIN_SCORE2_CD = 0
Set FUNC_SCORE2_CD = 0
Set CLIN_SCORE3_CD = 0
Set FUNC_SCORE3_CD = 0
Set CLIN_SCORE4_CD = 0
Set FUNC_SCORE4_CD = 0

10. Checking Data for Validity/Usability for Classification:

3.1 [Dates]

[Testing validity of M0090]
IF M0090_INFO_COMPLETED_DT IS NOT BETWEEN "199*****" AND “201*****", THEN
M0090_INFO_COMPLETED_DT_INVLD = 1;
else IF M0090_INFO_COMPLETED_DT IS NOT BETWEEN "****01**" AND "****12**", THEN
M0090_INFO_COMPLETED_DT_INVLD = 1;
else IF M0090_INFO_COMPLETED_DT IS NOT BETWEEN "******01" AND "******31", THEN
M0090_INFO_COMPLETED_DT_INVLD = 1;
else IF M0090_INFO_COMPLETED_DT < "19990719", THEN M0090_INFO_COMPLETED_DT_INVLD= 1.

[OASIS 1.60 valid]
IF M0090_INFO_COMPLETED_DT_INVLD = 1, THEN OASISV160_OR_LATER = BLANK;
else IF M0090_INFO_COMPLETED_DT > “20071226” and M0100_ASSMT_REASON = [04 or 05],
THEN OASISV160_OR_LATER = 1;
else IF M0090_INFO_COMPLETED_DT > “20071231” and M0100_ASSMT_REASON = [01 or 03],
THEN OASISV160_OR_LATER = 1;

[Grouper 2.01 used]
IF M0090_INFO_COMPLETED_DT_INVLD = 1, THEN GROUPER0201 = BLANK;

else IF M0090_INFO_COMPLETED_DT IS > “20071231” and M0100_ASSMT_REASON=01 or 03, THEN
GROUPER0201 = 1;

else IF M0090_INFO_COMPLETED_DT is >= "20071227" and M0100_ASSMT_REASON=04 or 05, THEN GROUPER0201 = 1

[presumed to be recertification assessments for payment episodes starting 1/1/2008 or later which are being conducted in the "5-day window" at the conclusion of the previous episode.]

[NB: This logic does not cover ALL situations, and in some cases it is anticipated that providers or RHHIs may need to generate the HIPPS code manually- e.g., assessment with M0100_ASSMT_REASON=04 or 05, assessment completed date = 12/27/2007, and episode start date = 12/31/2007.]

3.2 [Identify valid and scorable diagnosis codes for case-mix classification and assign to diagnosis groups- main model]

M0230/M0240/246:
(Validate M0230a range)
If ICD9_Start(1) + 1 is not 0-9 or "V", ICD9_Skip(1)=1 AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

If ICD9_Start(1) + 2-3 is not 00-99, ICD9_Skip(1)=1 AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

(Validate that M0230a is not a manifestation/secondary-only code)
Search Table 1 with ICD9_Start(1) + 1-6. If manifestation, ICD9_Skip(1)=1 AND MANIFESTATION_SEQUENCING_FLAG = 1

(Check diagnoses for inappropriate E-codes)
If ICD9_Start(1,7-18) + 0 is "E", ICD9_Skip(n)=1 AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

(E-codes are valid for M0240x but not scored)
If ICD9_Start(2-18) + 0 is "E", ICD9_Skip(n)=1

(Check all diagnoses for missing 4th or 5th digits)
Search Table 2 with ICD9_Start(1-18) + 1-6; if $4^{th}/5^{th}$ digits missing, ICD9_Skip(n)=1 AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

(Validate M0240x range [blanks are valid but don't score points])
If ICD9_Start(2-6) + 1 is not 0-9 or "V", ICD9_Skip(n)=1
If ICD9_Start(2-6) + 2-3 is not 00-99, ICD9_Skip(n)=1

(Validate M0246x3 and M0246x4 range [blanks are valid but don't score points])
If ICD9_Start(7-18) + 1-3 is not 000-999, ICD9_Skip(n)=1

(Turn on the clinical data issue flag if M0240-246 contain invalid values)
If ICD9_Start(2-18) + 1 is not 0-9 or "V" or " ", CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1
If ICD9_Start(2-18) + 2-3 is not 00-99 or " ", CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

(Screening rows that contain V-codes: use the M0230/40 diagnosis or the M0246x3 / M0246x4 pair on the same row? Disqualify one or the other.)
IF ICD9_Start(1-6) + 1 = "V":
(First, look for V-codes in M0230/M0240 that are case-mix diagnoses; if found, use them and disqualify the M0246 variables on that row; else, disqualify the V-code from scoring.)
Search Table 1 with ICD9_Start(n) + 1-6.
If found, ICD9_Skip(n)=0 and ICD9_Skip(n+6)=1 and ICD9_Skip(n+12)=1;

Else, ICD9_Skip(n)=1.
(Second, determine if the V-code in M0230/M0240 can replace a case-mix diagnosis; if not, disqualify the entire row)
Search Table 4 with ICD9_Start(1-6) + 1-6.
If not found: ICD9_Skip(n+6)=1 and ICD9_Skip(n+12)=1;
(Third, screen M0246x4 for non-manifestation codes; if found, disqualify)
Else search Table 1 with ICD9_Start(n+12) + 1-6.
If not manifestation, ICD9_Skip(n+12)=1
(Fourth, check M0246x3 for manifestation codes; if found, disqualify)
Else, search Table 1 with ICD9_Start(7-12) + 1-6.
If manifestation, ICD9_Skip(n)=1 and
ICD9_Skip(n+6)=1 AND
MANIFESTATION_SEQUENCING_FLAG=1
(see below for check on acceptable etiology pairing in the M0246x3 / M0246x4 pair.)
(Fifth, if no V-code in M0230/M0240, M0246x3 and M0246x4 are not used)
ELSE { ICD9_Skip(n+6)=1 and ICD9_Skip(n+12)=1 }

(Special diabetes code pair verification)
If ICD9_Start(2-6) + 1-6 is { 362.01, 362.02, 366.41 } and
ICD9_Start(n-1) + 1-6 is not { 250.5x }, ICD9_Skip(n)=1 AND MANIFESTATION_SEQUENCING_FLAG = 1

If ICD9_Start(13-18) + 1-6 is { 362.01, 362.02, 366.41 } and
ICD9_Start(n-6) + 1-6 is not { 250.5x }, ICD9_Skip(n)=1 AND MANIFESTATION_SEQUENCING_FLAG = 1

If ICD9_Start(2-6) + 1-6 is { 357.2 } and
ICD9_Start(n-1) + 1-6 is not { 250.6x }, ICD9_Skip(n)=1 AND MANIFESTATION_SEQUENCING_FLAG = 1

If ICD9_Start(13-18) + 1-6 is { 357.2} and
ICD9_Start(n-6) + 1-6 is not { 250.6x }, ICD9_Skip(n)=1 AND MANIFESTATION_SEQUENCING_FLAG = 1

(Flag acceptable pairing of manifestation diagnoses in M0240 with etiologies; disqualify others)
Search Table 1with ICD9_Start(2-6) + 1-6. If manifestation:
Search Table 3, Part 1: “Allowable Etiology Codes for “Secondary–only” Diagnosis Codes,” columns 1 & 3, with code pair [ICD9_Start(n-1) + 1-6:ICD9_Start(n) + 1-6];
If found and ICD9_Skip(n)=0 and ICD9_Skip(n-1)=0, then ICD9_Manifest (n)=1;
Else search Table 3, Part 2: “EXCLUDED Etiology Codes for “Secondary–only” Diagnosis code = 785.4” columns 1 & 3 with code pair [ICD9_Start(n-1) + 1-6: ICD9_Start(n) + 1-6];
If found and ICD9_Skip(n)=0 and ICD9_Skip(n-1)=0, then ICD9_Manifest (n)=1;
Else ICD9_Skip(n)=1 and ICD9_Manifest (n)=0 AND
MANIFESTATION_SEQUENCING_FLAG = 1

(Flag acceptable pairing of manifestation diagnoses in M0246x4 with etiologies; disqualify others)
Search Table 1 with ICD9-Start(13-18) + 1-6. If manifestation:
Search Table 3, Part 1: “Allowable Etiology Codes for “Secondary–only” Diagnosis Codes,” columns 1 & 3, with code pair ICD9_Start(n-6) + 1-6: ICD9_Start(n) + 1-6;
If found and ICD9_Skip(n)=0 and ICD9_Skip(n-6)=0, then ICD9_Manifest (n)=1;
Else search Table 3, Part 2: “EXCLUDED Etiology Codes for “Secondary–only” Diagnosis code = 785.4” columns 1 & 3 with code pair [ICD9_Start(n-6) + 1-6: ICD9_Start(n) + 1-6];
If found and ICD9_Skip(n)=0 and ICD9_Skip(n-6)=0, then ICD9_Manifest (n)=1;
Else ICD9_Skip(n)=1 and ICD9_Manifest (n)=0 AND
MANIFESTATION_SEQUENCING_FLAG = 1

3.3 [Identify valid and scorable diagnosis codes for NRS case-mix classification and assign to NRS diagnosis groups]

(Validate M0230a range)
If NRS-ICD9_Start(1) + 1 is not 0-9 or "V", NRS-ICD9_Skip(1)=1 AND
CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

If NRS-ICD9_Start(1) + 2-3 is not 00-99 OR BLANK, NRS-ICD9_Skip(1)=1 AND
CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

(Validate that M0230a is not a manifestation/secondary-only code)
Search Table 6 with NRS-ICD9_Start(1) + 1-6. If manifestation, NRS-ICD9_Skip(1)=1 AND
MANIFESTATION_SEQUENCING_FLAG = 1

(Check diagnoses for inappropriate E-codes)
If NRS-ICD9_Start(1,7-18) + 0 is "E", NRS-ICD9_Skip(n)=1 AND
CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

(E-codes are valid for M0240x but not scored)
If NRS-ICD9_Start(2-18) + 0 is "E", NRS-ICD9_Skip(n)=1

(Check all diagnoses for missing 4th or 5th digits)
Search Table 2 with NRS-ICD9_Start(1-18) + 1-6; if $4^{th}/5^{th}$ digits missing, NRS-ICD9_Skip(n)=1 AND
CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

(Validate M0240x range [blanks are valid but don't score points])
If NRS-ICD9_Start(2-6) + 1 is not 0-9 or "V", NRS-ICD9_Skip(n)=1
If NRS-ICD9_Start(2-6) + 2-3 is not 00-99, NRS-ICD9_Skip(n)=1

(Validate M0246x3 and M0246x4 range [blanks are valid but don't score points])
If NRS-ICD9_Start(7-18) + 1-3 is not 000-999, NRS-ICD9_Skip(n)=1

(Turn on clinical data issue flag if M0240-246 contain invalid values)
If NRS-ICD9_Start(2-18) + 1 is not 0-9 or "V" or " ", CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1
If NRS-ICD9_Start(2-18) + 2-3 is not 00-99 or " ", CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

(Screening rows that contain V-codes: use the M0230/40 diagnosis or the M0246x3 / M0246x4 pair on the same row? Disqualify one or the other.)
IF NRS-ICD9_Start(1-6) + 1 = "V":
(First, look for V-codes in M0230/M0240 that are NRS case-mix diagnoses; if found, use them and disqualify the M0246 variables on that row; else, disqualify the V-code from scoring.)
Search Table 6 with NRS-ICD9_Start(n) + 1-6.
If found, NRS-ICD9_Skip(n)=0 and NRS-ICD9_Skip(n+6)=1 and NRS-ICD9_Skip(n+12)=1;
Else, NRS-ICD9_Skip(n)=1.
(*Second, determine if the V-code in M0230/M0240 can replace a case-mix diagnosis; if not, disqualify the entire row.)*
Search Table 4 (V-codes Potentially Replacing Case-mix Diagnosis) with NRS-ICD9_Start(1-6) + 1-6.
If not found: NRS-ICD9_Skip(n+6)=1 and NRS-ICD9_Skip(n+12)=1;
(Third, screen M0246x4 for non-manifestation codes; if found, disqualify)
Else search Table 6 with NRS-ICD9_Start(n+12) + 1-6.
If not manifestation, NRS-ICD9_Skip(n+12)=1

(Fourth, check M0246x3 for manifestation codes; if found, disqualify)
Else, search Table 6 with NRS-ICD9_Start(7-12) + 1-6.
If manifestation, NRS-ICD9_Skip(n)=1 and
NRS-ICD9_Skip(n+6)=1 AND
MANIFESTATION_SEQUENCING_FLAG=1
(see below for check on acceptable etiology pairing in the M0246x3 / M0246x4 pair.)
(Fifth, if no V-code in M0230/M0240, M0246x3 and M0246x4 not used)
ELSE { NRS-ICD9_Skip(n+6)=1 and NRS-ICD9_Skip(n+12)=1 }

(Flag acceptable pairing of manifestation diagnoses in M0240 with etiologies; disqualify others)
Search Table 6 with NRS-ICD9_Start(2-6) + 1-6. If manifestation:
Search Table 3, Part 1: "Allowable Etiology Codes for "Secondary–only" Diagnosis Codes," columns 1 & 3, with code pair [NRS-ICD9_Start(n-1) + 1-6:NRS-ICD9_Start(n) + 1-6];
If found and NRS-ICD9_Skip(n)=0 and NRS-ICD9_Skip(n-1)=0, then NRS-ICD9_Manifest (n)=1;
Else search Table 3, Part 2: "EXCLUDED Etiology Codes for "Secondary–only" Diagnosis code = 785.4" columns 1 & 3 with code pair
[NRS-ICD9_Start(n-1) + 1-6: NRS-ICD9_Start(n) + 1-6];
If found and NRS-ICD9_Skip(n)=0 and NRS-ICD9_Skip(n-1)=0, then
NRS-ICD9_Manifest (n)=1;
Else NRS-ICD9_Skip(n)=1 and NRS-ICD9_Manifest (n)=0 AND
MANIFESTATION_SEQUENCING_FLAG = 1

(Flag acceptable pairing of manifestation diagnoses in M0246x4 with etiologies; disqualify others)
Search Table 6 with NRS-ICD9-Start(13-18) + 1-6. If manifestation:
Search Table 3, Part 1: "Allowable Etiology Codes for "Secondary–only" Diagnosis Codes," columns 1 & 3, with code pair NRS-ICD9_Start(n-6) + 1-6: NRS-ICD9_Start(n) + 1-6;
If found and NRS-ICD9_Skip(n)=0 and NRS-ICD9_Skip(n-6)=0, then NRS-ICD9_Manifest (n)=1;
Else search Table 3, Part 2: "EXCLUDED Etiology Codes for "Secondary–only" Diagnosis code = 785.4" columns 1 & 3 with code pair
[NRS-ICD9_Start(n-6) + 1-6: NRS-ICD9_Start(n) + 1-6];
If found and NRS-ICD9_Skip(n)=0 and NRS-ICD9_Skip(n-6)=0,
then NRS-ICD9_Manifest (n)=1;
Else NRS-ICD9_Skip(n)=1 and NRS-ICD9_Manifest (n)=0 AND
MANIFESTATION_SEQUENCING_FLAG = 1

3.4 [Identify problems with other variables]

M0250:

IF M0250_THH_IV_INFUSION <> 0 OR 1 THEN M0250_THERAPIES_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0250_THH_PAR_NUTRITION <> 0 OR 1, THEN M0250_THERAPIES_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0250_THH_ENT_NUTRITION <> 0 OR 1, THEN M0250_THERAPIES_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0250_THH_NONE_ABOVE <> 0 OR 1, THEN M0250_THERAPIES_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0250_THH_NONE_ABOVE = 1 AND
[M0250_THH_IV_INFUSION = 1 OR

M0250_THH_PAR_NUTRITION = 1 OR
M0250_THH_ENT_NUTRITION = 1],
THEN M0250_INTERNAL_LOGIC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

[M0250_THH_IV_INFUSION = 0 AND
M0250_THH_PAR_NUTRITION = 0 AND
M0250_THH_ENT_NUTRITION = 0 AND
M0250_THH_NONE_ABOVE = 0]
THEN M0250_INTERNAL_LOGIC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0390:
IF M0390_VISION <> 00 OR 01 OR 02, THEN M0390_VISION_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0420:
IF M0420_FREQ_PAIN <> 00 OR 01 OR 02 OR 03, THEN M0420_PAIN_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0440:
IF M0440_LESION_OPEN_WND <> 0 OR 1, THEN M0440_LESION_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0450:
M0450a:
IF M0100_ASSMT_REASON <> [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND
M0445_PRESS_ULCER = 1 AND M0450_NBR_PRSULC_STG1 <> 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC1_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 or 05] AND [M0440_LESION_OPEN_WND <> 1 OR
M0445_PRESS_ULCER <> 1] AND M0450_NBR_PRSULC_STG1 = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC1_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND
M0450_NBR_PRSULC_STG1 <> 00 OR 01 OR 02 OR 03 OR 04 OR BLANK,
THEN M0450_NPRSULC1_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND <> 1 AND
M0450_NBR_PRSULC_STG1 = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC1_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0450b:
IF M0100_ASSMT_REASON <> [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND
M0445_PRESS_ULCER = 1 AND M0450_NBR_PRSULC_STG2 <> 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC2_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 or 05] AND [M0440_LESION_OPEN_WND <> 1 OR M0445_PRESS_ULCER <> 1] AND M0450_NBR_PRSULC_STG2 = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC2_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND M0450_NBR_PRSULC_STG2 <> 00 OR 01 OR 02 OR 03 OR 04 OR BLANK,
THEN M0450_NPRSULC2_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND <> 1 AND M0450_NBR_PRSULC_STG2 = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC2_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0450c:
IF M0100_ASSMT_REASON <> [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND M0445_PRESS_ULCER = 1 AND M0450_NBR_PRSULC_STG3 <> 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC3_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 or 05] AND [M0440_LESION_OPEN_WND <> 1 OR M0445_PRESS_ULCER <> 1] AND M0450_NBR_PRSULC_STG3 = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC3_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND M0450_NBR_PRSULC_STG3 <> 00 OR 01 OR 02 OR 03 OR 04 OR BLANK,
THEN M0450_NPRSULC3_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND <> 1 AND M0450_NBR_PRSULC_STG3 = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC3_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0450d:
IF M0100_ASSMT_REASON <> [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND M0445_PRESS_ULCER = 1 AND M0450_NBR_PRSULC_STG4 <> 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC4_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 or 05] AND [M0440_LESION_OPEN_WND <> 1 OR M0445_PRESS_ULCER <> 1] AND M0450_NBR_PRSULC_STG4 = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC4_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND M0450_NBR_PRSULC_STG4 <> 00 OR 01 OR 02 OR 03 OR 04 OR BLANK,
THEN M0450_NPRSULC4_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND <> 1 AND
M0450_NBR_PRSULC_STG4 = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0450_NPRSULC4_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0450e:
IF M0100_ASSMT_REASON <> [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND
M0445_PRESS_ULCER = 1 AND M0450_UNOBS_PRSULC <> 0 OR 1,
THEN M0450_UNOBS_PRSULC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 or 05] AND [M0440_LESION_OPEN_WND <> 1 OR
M0445_PRESS_ULCER <> 1] AND M0450_UNOBS_PRSULC = 0 OR 1,
THEN M0450_UNOBS_PRSULC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND = 1 AND
M0450_UNOBS_PRSULC <> 0 OR 1 OR BLANK,
THEN M0450_UNOBS_PRSULC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 or 05] AND M0440_LESION_OPEN_WND <> 1 AND
M0450_UNOBS_PRSULC = 0 OR 1,
THEN M0450_UNOBS_PRSULC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0460:
IF M0100_ASSMT_REASON <> [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND
M0445_PRESS_ULCER = 1 AND M0460_STG_PRBLM_ULCER <> 01 OR 02 OR 03 OR 04 OR NA,
THEN M0460_STGPRSUL_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 OR 05] AND [M0440_LESION_OPEN_WND <> 1 OR
M0445_PRESS_ULCER <> 1] AND M0460_STG_PRBLM_ULCER = 01 OR 02 OR 03 OR 04 OR NA,
THEN M0460_STGPRSUL_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND
M0460_STG_PRBLM_ULCER <> 01 OR 02 OR 03 OR 04 OR NA OR BLANK,
THEN M0460_STGPRSUL_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND <> 1 AND
M0460_STG_PRBLM_ULCER = 01 OR 02 OR 03 OR 04 OR NA,
THEN M0460_STGPRSUL_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 OR 05] AND
M0440_LESION_OPEN_WND = 1 AND
M0445_PRESS_ULCER = 1 AND
[M0450_NBR_PRSULC_STG1 = 01 OR 02 OR 03 OR 04 or
M0450_NBR_PRSULC_STG2 = 01 OR 02 OR 03 OR 04 or

M0450_NBR_PRSULC_STG3 = 01 OR 02 OR 03 OR 04 or
M0450_NBR_PRSULC_STG4 = 01 OR 02 OR 03 OR 04] and
M0460_STG_PRBLM_ULCER <> 01 OR 02 OR 03 OR 04,
THEN M0460_STGPRSUL_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND
M0440_LESION_OPEN_WND = 1 AND
[M0450_NBR_PRSULC_STG1 = 01 OR 02 OR 03 OR 04 or
M0450_NBR_PRSULC_STG2 = 01 OR 02 OR 03 OR 04 or
M0450_NBR_PRSULC_STG3 = 01 OR 02 OR 03 OR 04 or
M0450_NBR_PRSULC_STG4 = 01 OR 02 OR 03 OR 04] AND
M0460_STG_PRBLM_ULCER <> 01 OR 02 OR 03 OR 04,
THEN M0460_STGPRSUL_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0470:
IF M0100_ASSMT_REASON <> [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND
M0468_STASIS_ULCER = 1 AND
M0470_NBR_STASULC <> 00 OR 01 OR 02 OR 03 OR 04,
THEN M0470_NBR_STASULC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 OR 05] AND [M0440_LESION_OPEN_WND <> 1 OR
M0468_STASIS_ULCER <> 1] AND M0470_NBR_STASULC = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0470_NBR_STASULC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND
M0470_NBR_STASULC <> 00 OR 01 OR 02 OR 03 OR 04 OR BLANK,
THEN M0470_NBR_STASULC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND <> 1 AND
M0470_NBR_STASULC = 00 OR 01 OR 02 OR 03 OR 04,
THEN M0470_NBR_STASULC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0474:
IF M0100_ASSMT_REASON <> [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND
M0468_STASIS_ULCER = 1 AND
M0474_UNOBS_STASULC <> 0 OR 1,
THEN M0474_UNOBS_STASULC _INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 OR 05] AND [M0440_LESION_OPEN_WND <> 1 OR
M0468_STASIS_ULCER <> 1] AND M0474_UNOBS_STASULC = 0 OR 1,
THEN M0474_UNOBS_STASULC _INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND M0474_UNOBS_STASULC <> 0 OR 1 OR BLANK,
THEN M0474_UNOBS_STASULC _INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND <> 1 AND M0474_UNOBS_STASULC = 0 OR 1,
THEN M0474_UNOBS_STASULC _INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0476:
IF M0100_ASSMT_REASON <> [04 OR 05] AND [M0440_LESION_OPEN_WND = 1 AND M0468_STASIS_ULCER = 1 AND M0470_NBR_STASULC = 01 OR 02 OR 03 OR 04] AND M0476_STAT_PRB_STASULC <> 01 OR 02 OR 03 OR 04,
THEN M0476_STATSTASIS_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 OR 05] AND [M0440_LESION_OPEN_WND <> 1 OR M0468_STASIS_ULCER <> 1 OR M0470_NBR_STASULC <> 01 OR 02 OR 03 OR 04] AND M0476_STAT_PRB_STASULC = 01 OR 02 OR 03,
THEN M0476_STATSTASIS_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND M0470_NBR_STASULC = 01 OR 02 OR 03 OR 04] AND M0476_STAT_PRB_STASULC <> 01 OR 02 OR 03 OR NA OR BLANK,
THEN M0476_STATSTASIS_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND <> 1 OR M0470_NBR_STASULC <> 01 OR 02 OR 03 OR 04] AND M0476_STAT_PRB_STASULC = 01 OR 02 OR 03 OR NA,
THEN M0476_STATSTASIS_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0488:
IF M0100_ASSMT_REASON <> [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND M0482_SURG_WOUND = 1 AND M0484_NBR_SURGWND = 01 OR 02 OR 03 OR 04] AND M0488_STAT_PRB_SURGWND <> 01 OR 02 OR 03,
THEN M0488_STATSURG_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON <> [04 OR 05] AND [M0440_LESION_OPEN_WND <> 1 OR M0482_SURG_WOUND <> 1] AND M0488_STAT_PRB_SURGWND = 01 OR 02 OR 03 OR NA,
THEN M0488_STATSURG_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND = 1 AND M0488_STAT_PRB_SURGWND <> 01 OR 02 OR 03 OR NA OR BLANK,
THEN M0488_STATSURG_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = [04 OR 05] AND M0440_LESION_OPEN_WND <> 1 AND
M0488_STAT_PRB_SURGWND = 01 OR 02 OR 03 OR NA,
THEN M0488_STATSURG_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0490:
IF M0490_WHEN_DYSPNEIC <>00 OR 01 OR 02 OR 03 OR 04,
THEN M0490_DYSPNEIC_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0520:
IF M0520_UR_INCONT <> 00 OR 01 OR 02,
THEN M0520_UR_INCONT_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0530:
IF M0520_UR_INCONT = 01 AND M0530_UR_INCONT_OCCURS <> 00 OR 01 OR 02,
THEN M0530_URINCONT_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0520_UR_INCONT <> 01 AND M0530_UR_INCONT_OCCURS = 00 OR 01 OR 02,
THEN M0530_URINCONT_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0540:
IF M0100_ASSMT_REASON = 01 OR 03 AND
M0540_BWL_INCONT <> 00 OR 01 OR 02 OR 03 OR 04 OR 05 OR NA OR UK,
THEN M0540_BWLINCONT_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0100_ASSMT_REASON = 04 OR 05 AND
M0540_BWL_INCONT <> 00 OR 01 OR 02 OR 03 OR 04 OR 05 OR NA,
THEN M0540_BWLINCONT_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0550:
IF M0540_BWL_INCONT = [00 OR 01 OR 02 OR 03 OR 04 OR 05 OR UK] AND M0550_OSTOMY <> 00,
THEN M0550_OSTOMY_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0540_BWL_INCONT = NA AND M0550_OSTOMY <> 01 OR 02,
THEN M0550_OSTOMY_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

IF M0550_OSTOMY <> 00 OR 01 OR 02, THEN M0550_OSTOMY_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

M0800
IF M0800_CUR_INJECT_MEDS <> 00 OR 01 OR 02 OR NA,
THEN M0800_CUR_INJECT_MEDS_INVLD = 1
AND CLINICAL_DOMAIN_DATA_ISSUE_FLAG =1

[Functional Domain]
M0650/M0660:
IF [M0650_CUR_DRESS_UPPER <> 00 OR 01 OR 02 OR 03] AND [M0660_CUR_DRESS_LOWER = 00],
THEN M0650_660_CUR_DRESS_INVLD = 1
(M0660 is valid but does not earn points, M0650 is invalid – domain score could potentially increase if M0650 were corrected)
AND FUNCTIONAL_DOMAIN_DATA_ISSUE_FLAG =1

IF [M0650_CUR_DRESS_UPPER =00 AND [M0660_CUR_DRESS_LOWER <>00 OR 01 OR 02 OR 03],
THEN M0650_660_CUR_DRESS_INVLD = 1
(M0660 is invalid, M0650 is not earning points – domain score could potentially increase if M0660 were corrected))
AND FUNCTIONAL_DOMAIN_DATA_ISSUE_FLAG =1

M0670:
IF M0670_CUR_BATHING <>00 OR 01 OR 02 OR 03 OR 04 OR 05,
THEN M0670_CUR_BATHING_INVLD = 1
AND FUNCTIONAL_DOMAIN_DATA_ISSUE_FLAG =1

M0680:
IF M0680_CUR_TOILETING <>00 OR 01 OR 02 OR 03 OR 04,
THEN M0680_CUR_TOILETING_INVLD = 1
AND FUNCTIONAL_DOMAIN_DATA_ISSUE_FLAG =1

M0690:
IF M0690_CUR_TRANSFERRING <>00 OR 01 OR 02 OR 03 OR 04 OR 05,
THEN M0690_CUR_TRANSFER_INVLD = 1
AND FUNCTIONAL_DOMAIN_DATA_ISSUE_FLAG =1

M0700:
IF M0700_CUR_AMBULATION <>00 OR 01 OR 02 OR 03 OR 04 OR 05,
THEN M0700_CUR_AMBULATION_INVLD = 1
AND FUNCTIONAL_DOMAIN_DATA_ISSUE_FLAG =1

[Service Domain]

M0826:
IF M0826_THER_NEED_NA = 1 AND M0826_THER_NEED_NUM <> BLANK,
THEN M0826_THERAPY_NEED_NUM_INVLD = 1
AND SERVICE _DOMAIN_DATA_ISSUE_FLAG =1

IF M0826_THER_NEED_NA = 0 AND M0826_THER_NEED_NUM <> [number 000 thru 999],
THEN M0826_THERAPY_NEED_NUM_INVLD = 1
AND SERVICE _DOMAIN_DATA_ISSUE_FLAG =1

11. Calculating and Scoring Case-mix variables

[Scoring the Clinical domain]

[Scoring diagnosis variables – main model (performed 4 times – once for each scoring equation)]

[When scoring for each equation, be sure to use the appropriate scoring array:]

(Assign to diagnosis groups and set diagnosis group flags)
If ICD9_Skip(n)=0, search Table 1 with ICD9_Start(n) + 1-6.
If found, retrieve corresponding DG number (1 to 22).
Set ICD9_DG(n) = DG No.
Set Diag_GrpsSE(DG No) = 1

(Calculate maximum possible score for each of the 18 diagnoses to support choice of scoring variable when an etiology and a manifestation are both case-mix variables. (Score each diagnosis as primary diagnosis for now; those that are "other" diagnoses will have points recalculated below.))

Look up the diagnostic group for each ICD9_DG variable(1-18) in "Table 5: Case-Mix Adjustment Variables and Scores." Based on diagnosis group and other OASIS items, and assign points for the current scoring equation "SE" (1-4) to each diagnosis position from the indicated row(s).

IF ICD9_DG(1-18) = 1, add Table 5, row 1 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 2, add Table 5, row 2 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 3, add Table 5, row 3 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 4, add Table 5, row 4 scoring equation (SE) points to ICD9_PointsSE(n)
(see below for diabetes as secondary diagnosis, clinical variable, Table 5, row 5)
IF ICD9_DG(1-18) = 5 and Diag_GrpsSE (12) = 1,
add Table 5, row 6 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 5 and M0250_THH_ENT_NUTRITION = 1 AND
M0250_THERAPIES_INVLD =0 AND M0250_INTERNAL_LOGIC_INVLD= 0,
add Table 5, row 7 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = [6 or 14] and M0460_STG_PRBLM_ULCER = 1-4 AND
M0460_STGPRSUL_INVLD = 0,
add Table 5, row 19 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 7, add Table 5, row 8 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 7 and M0550_OSTOMY = 1-2 AND M0550_OSTOMY_INVLD = 0,
add Table 5, row 9 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 7 and Diag_GrpsSE (10-13) = 1,
add Table 5, row 10 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 8-9, add Table 5, row 11 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 10, add Table 5, row 12 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 10 and M0680_CUR_TOILETING = 02-04 AND
M0680_CUR_TOILETING_INVLD = 0,
add Table 5, row 13 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 10-11 and
(M0650_CUR_DRESS_UPPER = 1-3 or M0660_CUR_DRESS_LOWER = 01-03) AND
M0650_660_CUR_DRESS_INVLD = 0,
add Table 5, row 14 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 12, add Table 5, row 15 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 12 and

(M0650_CUR_DRESS_UPPER = 01-03 or M0660_CUR_DRESS_LOWER = 01-03) AND
M0650_660_CUR_DRESS_INVLD = 0,
add Table 5, row 16 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 12 and M0700_CUR_AMBULATION = 03-05 AND
M0700_CUR_AMBULATION_INVLD = 0,
add Table 5, row 17 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 13 and
[(M0670_CUR_BATHING = 02-05 and M0670_CUR_BATHING_INVLD = 0) or
(M0680_CUR_ TOILETING = 02-04 and M0680_CUR_TOILETING_INVLD = 0) or
(M0690_CUR_TRANSFERRING = 02-05 and M0690_CUR_TRANSFER_INVLD = 0) or
(M0700_CUR_AMBULATION = 03-05 and M0700_CUR_AMBULATION_INVLD = 0)]
add Table 5, row 18 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 14-15 and
(M0250_THH_IV_NUTRITION = 1 or M0250_THH_PAR_NUTRITION = 1) AND
(M0250_THERAPIES_INVLD =0 and M0250_INTERNAL_LOGIC_INVLD= 0),
add Table 5, row 20 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 16, add Table 5, row 21 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 17, add Table 5, row 22 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 18, add Table 5, row 23 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 18 and M0700_CUR_AMBULATION = 01-05 AND
M0700_CUR_AMBULATION_INVLD = 0,
add Table 5, row 24 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 19, add Table 25, row 3 scoring equation (SE) points to ICD9_PointsSE(n)

(see below for Skin 1 as a secondary diagnosis, clinical variable, Table 5, row 26)

IF ICD9_DG(1-18) = 19-20 and
(M0250_THH_IV_NUTRITION = 1 or M0250_THH_PAR_NUTRITION = 1) AND
(M0250_THERAPIES_INVLD =0 and M0250_INTERNAL_LOGIC_INVLD= 0),
add Table 5, row 27 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 20, add Table 5, row 28 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 21, add Table 5, row 29 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 22, add Table 5, row 30 scoring equation (SE) points to ICD9_PointsSE(n)

(Determining the primary diagnosis between the two pairs M0230a/240b or M0246x3/M0246x4. This must be done separately for each equation, because of differences in which codes earn points under each equation, which can determine which diagnoses are recognized for scoring and how many points they earn.)

(If M0246a4 was flagged as *a manifestation (which means M0230a was an appropriate V-code and M0246a3 was an appropriate etiology), and M0246a3 is not a case-mix diagnosis, M0246a4 is primary diagnosis.)*
If ICD9_Manifest(13)=1 and ICD9_DG(7)=0, ICD9_PDXSE(13)=1

(Else, if M0246a4 was flagged as a manifestation (which means M0230a was an appropriate V-code and M0246a3 was an appropriate etiology), and M0246a3 is a case-mix diagnosis in the same DG as M0246a4, M0246a3 is primary diagnosis.)
Else If ICD9_Manifest(13)=1 and ICD9_DG(13)=ICD9_DG(7), ICD9_PDXSE(7)=1

(Else, if M0246a4 was flagged as a manifestation (which means M0230a was an appropriate V-code and M0246a3 was an appropriate etiology), and M0246a3 is a case-mix diagnosis in different DG from M0246a4, M0246a3 and M0246a4 contend to be primary diagnosis based on points earned.)
Else If ICD9_Manifest(13)=1 and ICD9_DG(7) >0 and ICD9_DG(13) <> ICD9_DG(7), then:
IfICD9_PointsSE(13)>ICD9_PointsSE(7),ICD9_PDXSE(13)=1;Else ICD9_PDXSE(7)=1

(Else, if M0246a4 is not manifestation and M0246a3 was scored as a case-mix diagnosis, M0246a3 is primary diagnosis.
Else If ICD9_Manifest(13)=0 and ICD9_DG(7)>0, ICD9_PDXSE(7)=1;

(Else, if M0246a4 is not manifestation and M0246a3 was not scored as a case-mix diagnosis, evaluate M0230a/M0240b)
Else If ICD9_Manifest(13)=0 and ICD9_DG(7)=0:

(If M0240b was flagged as a manifestation and M0230a was not scored as a case-mix diagnosis, M0240b is the primary diagnosis.)
If ICD9_Manifest(2)=1 and ICD9_DG(1)=0, ICD9_PDXSE(2)=1

(Else if M0240b was flagged as a manifestation and M0230a was scored in the same case-mix group, M0230a is the primary diagnosis.)
Else If ICD9_Manifest(2)=1 and ICD9_DG(2)=ICD9_DG(1), ICD9_PDXSE(1)=1

(Else if M0240b was flagged as a manifestation and M0230a was scored in a different case-mix group, M0230a and M0240b contend to be primary diagnosis based on points earned.)
Else If ICD9_Manifest(2)=1 and ICD9_DG(1)>0 and
ICD9_DG(2)<>ICD9_DG(1), then:
If ICD9_PointsSE(2) > ICD9_PointsSE(1),ICD9_PDXSE(2)=1;
Else ICD9_PDXSE(1)=1

(Else, if M0240b is not a manifestation code, M0230a is the primary diagnosis (even if not a case-mix diagnosis)
Else If ICD9_Manifest(2)=0, ICD9_PDXSE(1)=1;

[Recalculate the scores of non-primary diagnoses in case-mix variables with different scores for primary vs. other diagnosis by setting that diagnosis' score to zero and rescoring, giving only the points that are based on being an "other" diagnosis.]
[Diabetes]
IF ICD9_DG(1-18) = 4 and ICD9_PDXSE(n)=0,
set ICD9_PointsSE(n) = 0 then
add Table 5, row 5 scoring equation (SE) points to ICD9_PointsSE(n)
[Neuro 1]
IF ICD9_DG(1-18) = 10 and ICD9_PDXSE(n)=0,
set ICD9_PointsSE(n) = 0
IF ICD9_DG(1-18) = 10 and ICD9_PDXSE(n)=0,
and (M0680_CUR_ TOILETING = 02-04 and M0680_CUR_TOILETING_INVLD = 0),
add Table 5, row 13 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = 10 and ICD9_PDXSE(n)=0, and
(M0650_CUR_DRESS_UPPER = 01-03 or M0660_CUR_DRESS_LOWER = 01-03) AND
M0650_660_CUR_DRESS_INVLD = 0,
add Table 5, row 14 scoring equation (SE) points to ICD9_PointsSE(n)
[Skin 1]
IF ICD9_DG(1-18) = 19 and ICD9_PDXSE(n)=0,
set ICD9_PointsSE(n)= 0 then
add Table 5, row 26 scoring equation (SE) points to ICD9_PointsSE(n)
IF ICD9_DG(1-18) = [19 or 20] and ICD9_PDXSE(n)=0 and
(M0250_THH_IV_NUTRITION = 1 or M0250_THH_PAR_NUTRITION = 1) AND

(M0250_THERAPIES_INVLD =0 and M0250_INTERNAL_LOGIC_INVLD= 0),
set ICD9_PointsSE(n)= 0 then
add Table 5, row 27 scoring equation (SE) points to ICD9_PointsSE(n)

(Re-initialize the Diag_GrpsSE array to zero; it will now be used to indicate when a DG has received points from an earlier ICD-9)

Set Diag_GrpsSE(1-22) = 0

(Cycle through all diagnosis positions with points. Drop points for non-initial occurrences of any diagnosis groups. Resolve contention within etiology/manifestation pairs when both are case-mix diagnoses in different diagnosis groups by retaining the DG with higher score unless that DG has already earned points via a previous occurrence.)

```
if ICD9_DG(1-18) > 0   and  ICD9_PointsSE(n) > 0 then
   {    (if diagnosis group is already "turned on", additional mentions earn no points)
        If Diag_GrpsSE (ICD9_DG(n)) = 1 then ICD9_PointsSE(n) = 0
        else

         {      (if M0240x diagnosis is a manifestation and preceding etiology has points, they contend and
                diagnosis with higher points is retained, earning points and turning on Diag-GrpsSE flag)
                if ( 2 <= n <= 6 ) and ICD9_Manifest(n)=1 and ICD9_Points(n-1) > 0
                 {
                        if ICD9_PointsSE(n) > ICD9_PointsSE(n-1)
                          {
                                ICD9_PointsSE(n-1) = 0 and Diag_GrpsSE (ICD9_DG(n-1)) = 0
                          }
                        else ICD9_PointsSE(n) = 0
                 }

                (if M0246x4 diagnosis is a manifestation and M0246x3 etiology has points, they contend and
                diagnosis with higher points is retained, earning points and turning on the NRS-Diag-GrpsSE
                flag)
                if ( 13 <= n <= 18 ) and ICD9_Manifest(n)=1 and ICD9_PointsSE(n-6) > 0
                 {
                        if ICD9_PointsSE(n) > ICD9_PointsSE(n-6)
                          {
                                ICD9_PointsSE(n-6) = 0 and Diag_GrpsSE (ICD9_DG(n-6)) = 0
                          }
                        else ICD9_PointsSE(n) = 0
                 }

                        [After all etiology/manifestation contention is over, any remaining diagnoses 1-18 that
                         still have their points are retained, keeping their points and turning on their
                        Diag-GrpsSE flag(s).]

                if ICD9_PointsSE(n) > 0  then Diag_GrpsSE (ICD9_DG(n)) = 1
         }
```

[Sum all the remaining diagnosis points into the clinical score.]

```
If ICD9_Points(1-18) > 0   then Clin_ScoreSE = Clin_ScoreSE + ICD9_PointsSE(n)
```

[Scoring remaining clinical variables – main model (performed 4 times – once for each scoring equation)]

IF [M0250_THH_IV_INFUSION = 1 OR M0250_THH_PAR_NUTRITION = 1] AND
M0250_INTERNAL_LOGIC_INVLD = 0, THEN
add Table 5, row 31 scoring equation (SE) points to Clin_ScoreSE

IF M0250_THH_ENT_NUTRITION = 1 AND M0250_INTERNAL_LOGIC_INVLD = 0,
add Table 5, row 32 scoring equation (SE) points to Clin_ScoreSE

IF M0390_VISION = [01 OR 02],
add Table 5, row 33 scoring equation (SE) points to Clin_ScoreSE

IF M0420_FREQ_PAIN = [02 OR 03],
add Table 5, row 34 scoring equation (SE) points to Clin_ScoreSE

IF [M0450_NBR_PRSULC_STG3 + M0450_NBR_PRSULC_STG4] >=2 AND
[M0450_NPRSULC3_INVLD + THEN M0450_NPRSULC4_INVLD] = 0,
add Table 5, row 35 scoring equation (SE) points to Clin_ScoreSE

IF M0460_STG_PRBLM_ULCER = [01 OR 02] AND
M0460_STGPRSUL_INVLD = 0,
add Table 5, row 36 scoring equation (SE) points to Clin_ScoreSE

IF M0460_STG_PRBLM_ULCER = [03 OR 04] AND
M0460_STGPRSUL_INVLD = 0,
add Table 5, row 37 scoring equation (SE) points to Clin_ScoreSE

IF M0476_STAT_PRB_STASULC = 02 AND
M0476_STATSTASIS_INVLD = 0,
add Table 5, row 38 scoring equation (SE) points to Clin_ScoreSE

IF M0476_STAT_PRB_STASULC = 03 AND
M0476_STATSTASIS_INVLD = 0,
add Table 5, row 39 scoring equation (SE) points to Clin_ScoreSE

IF M0488_STAT_PRB_SURGWND = 02 AND
M0488_STATSURG_INVLD = 0,
add Table 5, row 40 scoring equation (SE) points to Clin_ScoreSE

IF M0488_STAT_PRB_SURGWND = 03 AND
M0488_STATSURG_INVLD = 0,
add Table 5, row 41 scoring equation (SE) points to Clin_ScoreSE

IF M0490_WHEN_DYSPNEIC = [02 OR 03 OR 04] AND M0490_DYSPNEIC_INVLD=0,
add Table 5, row 42 scoring equation (SE) points to Clin_ScoreSE

IF M0540_BWL_INCONT = [02 OR 03 OR 04 OR 05] AND
M0540_BWLINCONT_INVLD = 0,
add Table 5, row 43 scoring equation (SE) points to Clin_ScoreSE

IF M0550_OSTOMY = [1 or 2] AND M0550_OSTOMY_INVLD = 0,

add Table 5, row 44 scoring equation (SE) points to Clin_ScoreSE

IF M0800_CUR_INJECT_MEDS = [00 OR 01 OR 02] AND
M0800_CUR_INJECT_MEDS_INVLD = 0,
add Table 5, row 45 scoring equation (SE) points to Clin_ScoreSE

[Scoring functional variables – main model (performed 4 times – once for each scoring equation)]

IF [M0650_CUR_DRESS_UPPER = [01 OR 02 OR 03] OR
M0660_CUR_DRESS_LOWER = [01 OR 02 OR 03] AND
M0650_660_CUR_DRESS_INVLD = <>1,
add Table 5, row 46 scoring equation (SE) points to Func_ScoreSE

IF M0670_CUR_BATHING = [02 OR 03 OR 04 OR 05],
add Table 5, row 47 scoring equation (SE) points to Func_ScoreSE

IF M0680_CUR_TOILETING = [02 OR 03 OR 04],
add Table 5, row 48 scoring equation (SE) points to Func_ScoreSE

IF M0690_CUR_TRANSFERRING = [02 OR 03 OR 04 OR 05],
add Table 5, row 49 scoring equation (SE) points to Func_ScoreSE

IF M0700_CUR_AMBULATION = [01 OR 02],
add Table 5, row 50 scoring equation (SE) points to Func_ScoreSE

IF M0700_CUR_AMBULATION = [03 OR 04 OR 05],
add Table 5, row 51 scoring equation (SE) points to Func_ScoreSE

[Scoring diagnosis variables – NRS model

(Assign to NRS diagnosis groups and set NRS diagnosis group flags)
If NRS-ICD9_Skip(n)=0, search Table 6 with NRS-ICD9_Start(n) + 1-6.
If found, retrieve corresponding DG number (1 to 12) and
set NRS-ICD9_DG(n) = DG No. AND
set NRS-Diag_GrpsSE(DG No) = 1

(Note: NRS Diagnosis Group #3, Diabetic Ulcers, is a special case defined with two separate diagnosis entries; this is addressed separately below.)

(Setting the NRS diagnosis group flag for Diabetic Ulcers, identified by primary diagnosis and first "other" diagnosis and "turning off" the other non-pressure, non-stasis ulcer flag:)
IF (M0230_PRIMARY_DIAG_ICD = 250.80-250.89 and
M0240_OTH_DIAG1_ICD = 707.10-707.9), then

set NRS-ICD9_DG(1) = 3 AND
set NRS-ICD9_DG(2) = 0 AND
set NRS-Diag_GrpsSE(3) = 1 AND
set NRS-Diag_GrpsSE(6) = 0)

(Calculate maximum possible score for each of the 18 diagnoses to support choice of scoring variable when an etiology and a manifestation are both NRS case-mix variables. (Score each diagnosis as primary dx for now; those that are "other" diagnoses will have points recalculated below.))

Set NRS_Score = 0

Look up the diagnostic group for each NRS-ICD9_DG variable in "Table 7: NRS Case-Mix Adjustment Variables and Point Scores" and assign points to each diagnosis position.

IF NRS-ICD9_DG(1-18) = 1, assign Table 7, row 1 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 2, assign Table 7, row 3 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 4, assign Table 7, row 6 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 5, assign Table 7, row 8 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 6, assign Table 7, row 10 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 7, assign Table 7, row 11 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 8, assign Table 7, row 13 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 9, assign Table 7, row 15 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 10, assign Table 7, row 17 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 11, assign Table 7, row 18 points to NRS-ICD9_Points(n)
IF NRS-ICD9_DG(1-18) = 12, assign Table 7, row 19 points to NRS-ICD9_Points(n)

(Determining the primary diagnosis between the two pairs M0230a/240b or M0246x3/M0246x4.)

(If M0246a4 was flagged as *a manifestation (which means M0230a was an appropriate V-code and M0246a3 was an appropriate etiology), and M0246a3 is not a case-mix diagnosis, M0246a4 is primary diagnosis.)*
If NRS-ICD9_Manifest(13)=1 and NRS-ICD9_DG(7)=0, NRS-ICD9_PDX(13)=1

(Else, if M0246a4 was flagged as a manifestation (which means M0230a was an appropriate V-code and M0246a3 was an appropriate etiology), and M0246a3 is a case-mix diagnosis in the same DG as M0246a4, M0246a3 is primary diagnosis.)
Else If NRS-ICD9_Manifest(13)=1 and NRS-ICD9_DG(13)=NRS-ICD9_DG(7), NRS-ICD9_PDX(7)=1

(Else, if M0246a4 was flagged as a manifestation (which means M0230a was an appropriate V-code and M0246a3 was an appropriate etiology), and M0246a3 is a case-mix diagnosis in different DG from M0246a4, M0246a3 and M0246a4 contend to be primary diagnosis based on points earned.)
Else If NRS-ICD9_Manifest(13)=1 and NRS-ICD9_DG(7) >0 and NRS-ICD9_DG(13) <> NRS-ICD9_DG(7), then:

IfNRS-ICD9_Points(13)>NRS-ICD9_Points(7),NRS-ICD9_PDX(13)=1;Else NRS-ICD9_PDX(7)=1

(Else, if M0246a4 is not manifestation and M0246a3 was scored as a case-mix diagnosis, M0246a3 is primary diagnosis.
Else If NRS-ICD9_Manifest(13)=0 and NRS-ICD9_DG(7)>0, NRS-ICD9_PDX(7)=1;

(Else, if M0246a4 is not manifestation and M0246a3 was not scored as a case-mix diagnosis, evaluate M0230a/M0240b)
Else If NRS-ICD9_Manifest(13)=0 and NRS-ICD9_DG(7)=0:

(If M0240b was flagged as a manifestation and M0230a was not scored as a case-mix diagnosis, M0240b is the primary diagnosis.)
If NRS-ICD9_Manifest(2)=1 and NRS-ICD9_DG(1)=0, NRS-ICD9_PDX(2)=1

(Else if M0240b was flagged as a manifestation and M0230a was scored in the same case-mix group, M0230a is the primary diagnosis.)
Else If NRS-ICD9_Manifest(2)=1 and NRS-ICD9_DG(2)=NRS-ICD9_DG(1),
NRS-ICD9_PDX(1)=1

(Else if M0240b was flagged as a manifestation and M0230a was scored in a different case-mix group, M0230a and M0240b contend to be primary diagnosis based on points earned.)
Else If NRS-ICD9_Manifest(2)=1 and NRS-ICD9_DG(1)>0 and
NRS-ICD9_DG(2)<>NRS-ICD9_DG(1), then:
IfNRS-ICD9_Points(2) > NRS-ICD9_Points(1),NRS-ICD9_PDX(2)=1;
Else NRS-ICD9_PDX(1)=1
(Else, if M0240b is not a manifestation code, M0230a is the primary diagnosis (even if not a case-mix diagnosis)
Else If NRS-ICD9_Manifest(2)=0, NRS-ICD9_PDX(1)=1;

[Recalculate the scores of non-primary diagnoses in NRS case-mix variables with different scores for primary vs. other diagnosis by setting that diagnosis' score to zero and rescoring, giving only the NRS points that are based on being an "other" diagnosis.]

[Anal fissure, fistula]
IF NRS-ICD9_DG(1-18) = 1 and NRS-ICD9_PDX(n)=0,
setNRS-ICD9_Points(n) = 0 then
add Table 7, row 2 points toNRS-ICD9_Points(n)
[Cellulitis, abscess]
IF NRS-ICD9_DG(1-18) = 2 and NRS-ICD9_PDX(n)=0,
setNRS-ICD9_Points(n) = 0 then
add Table 7, row 4 points toNRS-ICD9_Points(n)
[Gangrene]
IF NRS-ICD9_DG(1-18) = 4 and NRS-ICD9_PDX(n)=0,
setNRS-ICD9_Points(n) = 0 then
add Table 7, row 7 points toNRS-ICD9_Points(n)
[Malignant neoplasms skin]
IF NRS-ICD9_DG(1-18) = 5 and NRS-ICD9_PDX(n)=0,
setNRS-ICD9_Points(n) = 0 then
add Table 7, row 9 points toNRS-ICD9_Points(n)
[Other infections of skin]
IF NRS-ICD9_DG(1-18) = 7 and NRS-ICD9_PDX(n)=0,
setNRS-ICD9_Points(n) = 0 then
add Table 7, row 12 points toNRS-ICD9_Points(n)
[Post-op complications]
IF NRS-ICD9_DG(1-18) = 8 and NRS-ICD9_PDX(n)=0,
setNRS-ICD9_Points(n) = 0 then
add Table 7, row 14 points toNRS-ICD9_Points(n)
[Trauma]
IF NRS-ICD9_DG(1-18) = 9 and NRS-ICD9_PDX(n)=0,
setNRS-ICD9_Points(n) = 0 then
add Table 7, row 16 points toNRS-ICD9_Points(n)

[Re-initialize the NRS-Diag_Grps array to zero; it will now be used to indicate when a DG has received points from an earlier NRS-ICD-9.]

Set NRS-Diag_GrpsSE(1-12) = 0

(Cycle through all diagnosis positions with points. Drop points for non-initial occurrences of any NRS diagnosis groups. Resolve contention within etiology/manifestation pairs when both are case-mix diagnoses in different diagnosis groups by retaining the DG with higher score unless that DG has already earned points via a previous occurrence.)

```
IF NRS-ICD9_DG(1-18) > 0 and NRS-ICD9_Points(n) > 0 then
   {   (if diagnosis group is already "turned on", additional mentions earn no points)
       If NRS-Diag_Grps (ICD9_DG(n)) = 1 then NRS-ICD9_Points(n) = 0

       else
        {    [if M0240x diagnosis is a manifestation and preceding etiology has points, they contend and
             diagnosis with higher points is retained, earning points and keeping the
             NRS-Diag_Grps flag turned on.]
             if ( 2 <= n <= 6 ) and NRS-ICD9_Manifest(n)=1 and NRS-ICD9_Points(n-1) > 0:
              {
                    If NRS-ICD9_Points(n) >NRS-ICD9_Points(n-1),
                     {
                           NRS-ICD9_Points(n-1) = 0 and NRS-Diag_Grps(ICD9_DG(n-1)) = 0
                     }
                    else NRS-ICD9_Points(n) = 0
              }

             [if M0246x4 diagnosis is a manifestation and M0246x3 etiology has points, they contend and
             diagnosis with higher points is retained, earning points and keeping the
             NRS-Diag_Grps flag turned on.]
             if ( 13 <= n <= 18 ) and NRS-ICD9_Manifest(n)=1 and NRS-ICD9_Points(n-6) > 0:
              {
                    if NRS-ICD9_Points(n) >NRS-ICD9_Points(n-6),
                     {
                           ICD9_Points(n-6) = 0 and NRS-Diag_Grps(ICD9_DG(n-6)) = 0
                     }
                    else NRS-ICD9_Points(n) = 0
              }

             (After all etiology/manifestation contention is over, any remaining diagnoses 1-18 that still have
             their points are retained, keeping their points and turning on their NRS-Diag_Grpsflag(s))
             if NRS-ICD9_Points(n) > 0  then NRS-Diag_Grps(ICD9_DG(n)) = 1
        }

   [Scoring remaining "Selected Skin Conditions" variables – NRS  model]

IF M0450_NBR_PRSULC_STG1 = [01 OR 02] AND M0450_NPRSULC1_INVLD=0,
       add Table 7, row 20 points to NRS_Score.
IF M0450_NBR_PRSULC_STG1 = [03 OR 04] AND M0450_NPRSULC1_INVLD=0,
       add Table 7, row 21 points to NRS_Score.
IF M0450_NBR_PRSULC_STG2 = 01 AND M0450_NPRSULC2_INVLD=0,
       add Table 7, row 22 points to NRS_Score.
IF M0450_NBR_PRSULC_STG2 = 02 AND M0450_NPRSULC2_INVLD=0,
       add Table 7, row 23 points to NRS_Score.
IF M0450_NBR_PRSULC_STG2 = 03 AND M0450_NPRSULC2_INVLD=0,
       add Table 7, row 24 points to NRS_Score.
```

IF M0450_NBR_PRSULC_STG2 = 04 AND M0450_NPRSULC2_INVLD=0,
add Table 7, row 25 points to NRS_Score.
IF M0450_NBR_PRSULC_STG3 = 01 AND M0450_NPRSULC3_INVLD=0,
add Table 7, row 26 points to NRS_Score.
IF M0450_NBR_PRSULC_STG3 = 02 AND M0450_NPRSULC3_INVLD=0,
add Table 7, row 27 points to NRS_Score.
IF M0450_NBR_PRSULC_STG3 = 03 AND M0450_NPRSULC3_INVLD=0,
add Table 7, row 28 points to NRS_Score.
IF M0450_NBR_PRSULC_STG3 = 04 AND M0450_NPRSULC3_INVLD=0,
add Table 7, row 29 points to NRS_Score.
IF M0450_NBR_PRSULC_STG4 = 01 AND M0450_NPRSULC3_INVLD=0,
add Table 7, row 30 points to NRS_Score.
IF M0450_NBR_PRSULC_STG4 = 02 AND M0450_NPRSULC3_INVLD=0,
add Table 7, row 31 points to NRS_Score.
IF M0450_NBR_PRSULC_STG4 = [03 OR 04] AND M0450_NPRSULC3_INVLD=0,
add Table 7, row 32 points to NRS_Score.
IF M0450_UNOBS_PRSULC = 1 AND M0450_UNOBS_PRSULC_INVLD =0,
add Table 7, row 33 points to NRS_Score.
IF M0470_NBR_STASULC = 02 AND M0470_NBR_STASULC_INVLD =0,
add Table 7, row 34 points to NRS_Score.
IF M0470_NBR_STASULC = 03 AND M0470_NBR_STASULC_INVLD =0,
add Table 7, row 35 points to NRS_Score.
IF M0470_NBR_STASULC = 04 AND M0470_NBR_STASULC_INVLD =0,
add Table 7, row 36 points to NRS_Score.
IF M0474_UNOBS_STASULC = 1 AND M0474_UNOBS_STASULC _INVLD = 0,
add Table 7, row 37 points to NRS_Score.
IF M0476_STAT_PRB_STASULC = 01 AND M0476_STATSTASIS_INVLD = 0,
add Table 7, row 38 points to NRS_Score.
IF M0476_STAT_PRB_STASULC = 02 AND M0476_STATSTASIS_INVLD = 0,
add Table 7, row 39 points to NRS_Score.
IF M0476_STAT_PRB_STASULC = 03 AND M0476_STATSTASIS_INVLD = 0,
add Table 7, row 40 points to NRS_Score.
IF M0488_STAT_PRB_SURGWND = 02 AND M0488_STATSURG_INVLD = 0,
add Table 7, row 41 points to NRS_Score
IF M0488_STAT_PRB_SURGWND = 03 AND M0488_STATSURG_INVLD = 0,
add Table 7, row 42 points to NRS_Score

NRS_Selected_Skin_Conditions_Score = NRS_Score +NRS-ICD9_Points(1-18)

if M0550_OSTOMY = 01 AND M0550_OSTOMY_INVLD = 0,
add Table 7, row 43 points to NRS_Score.
if M0550_OSTOMY = 02 AND M0550_OSTOMY_INVLD = 0,
add Table 7, row 44 points to NRS_Score.
if NRS_Selected_Skin_Conditions_Score > 0 and M0550_OSTOMY = 01 AND
M0550_OSTOMY_INVLD = 0,
add Table 7, row 45 points to NRS_Score.
if NRS_Selected_Skin_Conditions_Score > 0 and M0550_OSTOMY = 02 AND
M0550_OSTOMY_INVLD = 0,
add Table 7, row 46 points to NRS_Score.
if M0250_THH_IV_INFUSION = 1 AND M0250_THERAPIES_INVLD =0 AND
M0250_INTERNAL_LOGIC_INVLD= 0,
add Table 7, row 47 points to NRS_Score.

if M0520_UR_INCONT = 02 AND M0520_UR_INCONT_INVLD = 1,
add Table 7, row 48 points to NRS_Score.
if M0540_BWL_INCONT = 04 OR 05 AND M0540_BWLINCONT_INVLD = 0,
add Table 7, row 49 points to NRS_Score

(Sum all the remaining diagnosis points into the NRS score)
NRS_Score = NRS_Score +sum (NRS-ICD9_Points(1-18))

12. Computation of HIPPS Code, by Position:

[Compute Scoring Equation for Defining HIPPS Code]

If M0110_EPISODE_TIMING = [01 or UK] and M0826_THER_NEED_NUM <=13,
THEN HIPPS_SCORING_EQUATION = 1
If M0110_EPISODE_TIMING = [01 or UK] and M0826_THER_NEED_NUM >=14,
THEN HIPPS_SCORING_EQUATION = 2
If M0110_EPISODE_TIMING = 02 and M0826_THER_NEED_NUM <=13,
THEN HIPPS_SCORING_EQUATION = 3
If M0110_EPISODE_TIMING = 02 and M0826_THER_NEED_NUM >=14
THEN HIPPS_SCORING_EQUATION = 4

[Compute Grouping Step]

If M0110_EPISODE_TIMING = [01 or UK] and M0826_THER_NEED_NUM <=13,
THEN GROUPING_STEP = 1
If M0110_EPISODE_TIMING = [01 or UK] and 14<= M0826_THER_NEED_NUM <=19,
THEN GROUPING_STEP = 2
If M0110_EPISODE_TIMING = 02 and M0826_THER_NEED_NUM <=13,
THEN GROUPING_STEP = 3
If M0110_EPISODE_TIMING = 02 and 14<= M0826_THER_NEED_NUM <=19,
THEN GROUPING_STEP = 4
If M0110_EPISODE_TIMING = [01 or 02 or UK] and M0826_THER_NEED_NUM >=20,
THEN GROUPING_STEP = 5

HIPPS_1 (Grouping Step):

SET HIPPS_1 = GROUPING_STEP

HIPPS_2 (Clinical Domain):

IF GROUPING STEP = 1 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) < =4,
THEN HIPPS_2 = A
IF GROUPING STEP = 1 AND 5 <= CLIN_SCORE(HIPPS_SCORING_EQUATION) <= 8,
THEN HIPPS_2 = B
IF GROUPING STEP = 1 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) >=9,
THEN HIPPS_2 = C

IF GROUPING STEP = 2 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) <=6,
THEN HIPPS_2 = A
IF GROUPING STEP = 2 AND 7 <= CLIN_SCORE(HIPPS_SCORING_EQUATION) <= 14,
THEN HIPPS_2 = B
IF GROUPING STEP = 2 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) >=15,

THEN HIPPS_2 = C

IF GROUPING STEP = 3 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) <=2
THEN HIPPS_2 = A
IF GROUPING STEP = 3 AND 3 <= CLIN_SCORE(HIPPS_SCORING_EQUATION) <= 5,
THEN HIPPS_2 = B
IF GROUPING STEP = 3 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) >=6,
THEN HIPPS_2 = C

IF GROUPING STEP = 4 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) <=8,
THEN HIPPS_2 = A
IF GROUPING STEP = 4 AND 9 <= CLIN_SCORE(HIPPS_SCORING_EQUATION) <=16,
THEN HIPPS_2 = B
IF GROUPING STEP = 4 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) >=17,
THEN HIPPS_2 = C

IF GROUPING STEP = 5 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) <=7,
THEN HIPPS_2 = A
IF GROUPING STEP = 5 AND 8 <= CLIN_SCORE(HIPPS_SCORING_EQUATION) <=14,
THEN HIPPS_2 = B
IF GROUPING STEP = 5 AND CLIN_SCORE(HIPPS_SCORING_EQUATION) >=15,
THEN HIPPS_2 = C

HIPPS_3 (Functional Domain):

IF GROUPING STEP = 1 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) <=5,
THEN HIPPS_3 = F
IF GROUPING STEP = 1 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) =6,
THEN HIPPS_3 = G
IF GROUPING STEP = 1 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) >=7,
THEN HIPPS_3 = H

IF GROUPING STEP = 2 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) <=6,
THEN HIPPS_3 = F
IF GROUPING STEP = 2 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) =7,
THEN HIPPS_3 = G
IF GROUPING STEP = 2 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) >=8,
THEN HIPPS_3 = H

IF GROUPING STEP = 3 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) <=8,
THEN HIPPS_3 = F
IF GROUPING STEP = 3 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) = 9,
THEN HIPPS_3 = G
IF GROUPING STEP = 3 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) >=10,
THEN HIPPS_3 = H

IF GROUPING STEP = 4 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) <=7,
THEN HIPPS_3 = F
IF GROUPING STEP = 4 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) =8,
THEN HIPPS_3 = G
IF GROUPING STEP = 4 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) >=9,
THEN HIPPS_3 = H

IF GROUPING STEP = 5 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) <=6, THEN HIPPS_3 = F
IF GROUPING STEP = 5 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) =7, THEN HIPPS_3 = G
IF GROUPING STEP = 5 AND FUNC_SCORE(HIPPS_SCORING_EQUATION) >=8, THEN HIPPS_3 = H

HIPPS_4 (Service Domain):

IF GROUPING STEP = 1 AND M0826_THER_NEED_NUM <=5, THEN HIPPS_4 = K
IF GROUPING STEP = 1 AND M0826_THER_NEED_NUM =6, THEN HIPPS_4 = L
IF GROUPING STEP = 1 AND 7<= M0826_THER_NEED_NUM <=9, THEN HIPPS_4 = M
IF GROUPING STEP = 1 AND M0826_THER_NEED_NUM =10, THEN HIPPS_4 = N
IF GROUPING STEP = 1 AND 11<= M0826_THER_NEED_NUM <=13, THEN HIPPS_4 = P

IF GROUPING STEP = 2 AND 14<= M0826_THER_NEED_NUM <=15, THEN HIPPS_4 = K
IF GROUPING STEP = 2 AND 16<= M0826_THER_NEED_NUM <=17, THEN HIPPS_4 = L
IF GROUPING STEP = 2 AND 18<= M0826_THER_NEED_NUM <=19, THEN HIPPS_4 = M

IF GROUPING STEP = 3 AND M0826_THER_NEED_NUM <=5, THEN HIPPS_4 = K
IF GROUPING STEP = 3 AND M0826_THER_NEED_NUM =6, THEN HIPPS_4 = L
IF GROUPING STEP = 3 AND 7<= M0826_THER_NEED_NUM <=9, THEN HIPPS_4 = M
IF GROUPING STEP = 3 AND M0826_THER_NEED_NUM =10, THEN HIPPS_4 = N
IF GROUPING STEP = 3 AND 11<= M0826_THER_NEED_NUM <=13, THEN HIPPS_4 = P

IF GROUPING STEP = 4 AND 14<= M0826_THER_NEED_NUM <=15, THEN HIPPS_4 = K
IF GROUPING STEP = 4 AND 16<= M0826_THER_NEED_NUM <=17, THEN HIPPS_4 = L
IF GROUPING STEP = 4 AND 18<= M0826_THER_NEED_NUM <=19, THEN HIPPS_4 = M

IF GROUPING STEP = 5, THEN HIPPS_4 = K

HIPPS_5 (Non-routine Supplies (NRS) Group):

IF NRS_SCORE =0, THEN HIPPS_5 = S
IF 1 <= NRS_SCORE <= 14, THEN HIPPS_5 = T
IF 15 <= NRS_SCORE <= 27, THEN HIPPS_5 = U
IF 28 <= NRS_SCORE <= 48, THEN HIPPS_5 = V
IF 49 <= NRS_SCORE <= 98, THEN HIPPS_5 = W
IF NRS_SCORE >= 99, THEN HIPPS_5 = X

Assembling the HIPPS Code:

SET HIPPS = CONCATENATE (HIPPS_1, HIPPS_2, HIPPS_3, HIPPS_4, HIPPS_5)

13. Screening out ineligible cases

Invalid dates:
IF M0090_INFO_COMPLETED_DT_INVLD = 1, THEN HIPPS = BLANK

Assessment not from period covered by Grouper 2.01, use earlier Grouper as appropriate :
ELSE, IF GROUPER0201 = 0, THEN HIPPS = BLANK AND GO TO GROUPER 1.0x

Invalid reasons for assessment:
ELSE, IF M0100_ASSMT_REASON <> 01 or 03 or 04 or 05, THEN HIPPS = BLANK

Non-case-mix assessments:
ELSE, IF M0826_THERAPY_NEED = "NA", THEN HIPPS = BLANK

14. Create Data Validity Flag

In Grouper 02.01, the data validity flag (formerly last character of the HIPPS code) has been converted to a separate output variable. . (This was done to continue to alert providers of data problems that cost case-mix points. In addition, a new dimension has been added to the validity flag to alert providers specifically when there is a problem with sequencing of manifestation codes. The values of the data validity flag and their derivation is shown below.

DERIVATION OF THE DATA VALIDITY FLAG				
IF:				THEN:
MANIFESTATION_ SEQUENCING_ FLAG =	AND CLINICAL_ DOMAIN_ DATA_ ISSUE_ FLAG =	AND FUNCTIONAL_ DOMAIN_ DATA_ ISSUE_ FLAG=	AND SERVICE_ DOMAIN_ DATA_ ISSUE_ FLAG=	DATA_ VALIDITY_ FLAG =
0	0	0	0	1
0	1	0	0	2
0	0	1	0	3
0	0	0	1	4
0	1	1	0	5
0	0	1	1	6
0	1	0	1	7
0	1	1	1	8
1	0	0	0	A
1	1	0	0	B
1	0	1	0	C
1	0	0	1	D
1	1	1	0	E
1	0	1	1	F
1	1	0	1	G
1	1	1	1	H

15. Create claim-OASIS matching string/Treatment Authorization Code

As noted in the introduction above, the claim-OASIS matching string is utilized to carry information needed to recategorize the claim in the event that changes during adjudication of the claim result in the episode needing to be scored and priced under a different Scoring Equation. Since the Pricer software will not have the OASIS assessment information with which to rescore the clinical and functional domains, the Grouper will store the clinical and functional points earned under each equation (in addition to the OASIS-claim matching information.) In order to store all of this information in an 18 byte field, the dates and points are converted to

letter codes. This general logic for this conversion is illustrated by the example below, the conversion values are shown in Table 8 in the Appendix.

#	Position	Definition	Format
1	1-2	M0030_YY – 2 digit year	99
2	3-4	M0030_JULIAN_CODE –alpha code for Julian date (e.g., Jan 1=1=AA; Mar 31=91=DM; see Table 8 in the Appendix.)	XX
3	5-6	M0090_YY – 2 digit year	99
4	7-8	M0090__JULIAN_CODE – alpha code for Julian date (as above)	XX
5	9	M0100_1 (convert to 1-digit: 1, 3, 4, or 5)	9
6	10	M0110_1_2 (Episode timing: 01 or UK = 1(early); 02 = 2 (late)	9
7	11	CLIN_SCORE1_CD - Alpha code for Clinical severity points – under Equation 1 (0 or 1=A, 2=B, 26+=Z; see Table 8 in the Appendix.)	X
8	12	FUNC_SCORE1_CD - Alpha code for Functional severity points – under Equation 1 (0 or 1=A, 2=B, 26+=Z; as above)	X
9	13	CLIN_SCORE2_CD - Alpha code for Clinical severity points – under Equation 2 (0 or 1=A, 2=B, 26+=Z; as above)	X
10	14	FUNC_SCORE2_CD - Alpha code for Functional severity points – under Equation 2 (0 or 1=A, 2=B, 26+=Z; as above)	X
11	15	CLIN_SCORE3_CD - Alpha code for Clinical severity points – under Equation 3 (0 or 1=A, 2=B, 26+=Z; as above)	X
12	16	FUNC_SCORE3_CD - Alpha code for Functional severity points – under Equation 3 (0 or 1=A, 2=B, 26+=Z; as above)	X
13	17	CLIN_SCORE4_CD - Alpha code for Clinical severity points – under Equation 4 (0 or 1=A, 2=B, 26+=Z; as above)	X
14	18	FUNC_SCORE4_CD - Alpha code for Functional severity points – under Equation 4 (0 or 1=A, 2=B, 26+=Z; as above)	X

An example of the treatment authorization code that would appear on the claim would be: 07JK08AA41GBMDCDLG.

1. Set M0030_YY = M0030_START_CARE_YR34
2. Set M0030_JULIAN_CODE = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 1 – DATES” in the Appendix with value of M0030_START_CARE_MMDD
3. Set M0090_YY = M0090_INFO_COMPLETED_YR34
4. Set M0090_JULIAN_CODE = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 1 – DATES” in the Appendix with value of M0090_INFO_COMPLETED_MMDD
5. Set M0100_1 = M0100_ASSMT_REASON2
6. If M0110_EPISODE_TIMING = UK or 01, M0110_1_2 = 1
   Else, If M0110_EPISODE_TIMING = 02, M0110_1_2 = 2
7. Set CLIN_SCORE1_CD = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 2 – POINTS” in the Appendix with value of CLIN_SCORE1
8. Set FUNC_SCORE1_CD = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 2 – POINTS” in the Appendix with value of FUNC_SCORE1
9. Set CLIN_SCORE2_CD = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 2 – POINTS” in the Appendix with value of CLIN_SCORE2

10. Set FUNC_SCORE2_CD = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 2 – POINTS” in the Appendix with value of FUNC_SCORE2
11. Set CLIN_SCORE3_CD = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 2 – POINTS” in the Appendix with value of CLIN_SCORE3
12. Set FUNC_SCORE3_CD = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 2 – POINTS” in the Appendix with value of FUNC_SCORE3
13. Set CLIN_SCORE4_CD = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 2 – POINTS” in the Appendix with value of CLIN_SCORE4
14. Set FUNC_SCORE4_CD = value returned from searching Table 8: “Hexavigesimal Code Tables (converting dates and point values to letter codes) - Part 2 – POINTS” in the Appendix with value of FUNC_SCORE4

CLAIM_OASIS_STRING = CONCATENATE:
(M0030_YY,
M0030_JULIAN_CODE,
M0090_YY,
M0090__JULIAN_CODE,
M0100_1,
M0110_1_2,
CLIN_SCORE1_CD,
FUNC_SCORE1_CD,
CLIN_SCORE2_CD,
FUNC_SCORE2_CD,
CLIN_SCORE3_CD,
FUNC_SCORE3_CD,
CLIN_SCORE4_CD,
FUNC_SCORE4_CD)

16. Grouper Output

OUTPUT HIPPS =	9XXXX (or BLANK)
OUTPUT GROUPER_VERSION =	02.01
OUTPUT CLAIM_OASIS_STRING =	99XX99XX99XXXXXXXX
OUTPUT DATA VALIDITY FLAG =	X