

RFP 4

```
*****
****;
** PROGRAM:          SUITE9_CASEMIX_RUG-III-HC_G1_V2.1_P_2015-09-08.txt
** ;
** BY:              Brant Fries, Pil Park
** ;
** CHECKED BY:
** ;
** DATE:            11/27/07
** ;
** REVISION DATES:  1/16/09 (BEF), 11/28/11 (KLS), 03/19/12 (KLS), 10/21/13 (BEF)
** ;
**                  12/09/13 (KLS) , 09/08/15 (BEF)
** ;
** PURPOSE:         CODE FOR RUG-III/HC SYSTEM
** ;
** SOURCES:
** ;
** BASED ON:        interRAI SUITE, VERSION 9
** ;
** APPLIES TO:      SEE APPLICABILITY MATRIX
** ;
** DESCRIPTION:     RUG-III/HC is a resource-intensity (case-mix) measurement
** ;
**                  system designed for use in home care programs
** ;
** REFERENCES:      FOR DETAILS, SEE ARTICLE BY BJORKGREN, FRIES, SHUGARMAN
** ;
**                  - TESTING A RUG-III BASED CASE-MIX SYSTEM FOR HOME CARE
** ;
**                  Canadian J. Aging, 19 (Supp. 2):106-125, (Fall) 2000.
** ;
** INTERPRETATION:  See article above for basic description. This code is based
** ;
**                  on RUG-III originally developed for use in nursing homes with
** ;
**                  the MDS Version 2.0 assessment form. The code here crosswalks
** ;
**                  the RUG-III/HC system, designed for the MDS-HC V2.0 instrument
** ;
**                  to the interRAI Suite interRAI HC (Home Care). In doing so
** ;
**                  fewer iCODE items are missing than for the MDS-HC V2.0.
** ;
** INPUT VARIABLES: The interRAI HC Version 2.0 variables required by the SAS
** ;
**                  code for interRAI RUG-III/HC classification are given below.
** ;
**                  For each variable, the interRAI 'iCODE' item and label are
** ;
**                  given. Specification of these 'iCODES' and links to specific
** ;
**                  items in the interRAI HC are available in the iCODE MATRIX,
** ;
**                  available from interRAI.
** ;
** ;
**                  Before execution of RUG-III classification using the SAS code,
** ;
**                  all 58 iCODE items must be scanned for valid values as given
** ;
**                  in the list below.
```

NOTE: IN THE LIST BELOW, ITEMS WITH AN (S) IN THE DESCRIPTION REQUIRE THE CHA FUNCTIONAL SUPPLEMENT IN ADDITION TO THE CHA, ITEMS WITH AN (A) WILL BE MISSING ON THE interRAI ASSISTED LIVING INSTRUMENT (RUG-III/HC CAN BE COMPUTED FOR THIS INSTRUMENT, BUT IT IS NOT KNOWN HOW WILL IT WILL PERFORM)

VARIABLES (NOTE ALL NUMERIC EXCEPT FOR ICD-9 CODES)

ITEM	VALID VALUES	DESCRIPTION
------	--------------	-------------

NOTE: THE FOLLOWING 3 ITEMS ARE USED IN THE COGNITIVE PERFORMANCE SCALE (SCPS)

(SCPS) - NOTE THAT IT ALSO USES EATING PERFORMANCE (ig2j) - SEE BELOW

1) ic2a	01	Short-term memory OK
2) ic1	012345	Cognitive Skills/Daily Decision Making
3) id1	01234	Making Self Understood

OTHER VARIABLES

4) iE3a	0123	Wandering frequency (S)
5) iE3b	0123	Verbal abuse frequency (S)
6) iE3c	0123	Physical abuse frequency (S)
7) iE3d	0123	Socially inappropriate behavior frequency (S)
8) iE3e	0123	Resists care frequency
9) iE3f	0123	Inappropriate sexual behavior frequency (S)
10) iG1aa	01234568	Meal preparation IADL
11) iG1da	01234568	Medication Management IADL
12) iG1ea	01234568	Phone use IADL
13) iG2g	01234568	Toilet transfer ADL Self-Performance (S)
14) iG2h	01234568	Toileting ADL Self-Performance (S)
15) iG2i	01234568	Bed Mobility ADL Self-Performance (S,A)
16) iG2j	01234568	Eating ADL Self-Performance (S)

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**	17)	iI1e	0123	Hemiplegia/hemiparesis (S)
**	18)	iI1f	0123	Multiple sclerosis (S)
**	19)	iI1i	0123	Quadriplegia (S)
**	20)	iI1q	0123	Pneumonia (S)
**	21)	iI1t	0123	Diabetes mellitus
**	22)	iI2aba	CCC.CC	ICD-9 Code (for Cereb.Palsy/Septicemia)
**	23)	iI2bba	CCC.CC	ICD-9 Code (for Cereb.Palsy/Septicemia)
**	24)	iI2cba	CCC.CC	ICD-9 Code (for Cereb.Palsy/Septicemia)
**	25)	iI2dba	CCC.CC	ICD-9 Code (for Cereb.Palsy/Septicemia)
**	26)	iI2eba	CCC.CC	ICD-9 Code (for Cereb.Palsy/Septicemia)
**	27)	iI2fba	CCC.CC	ICD-9 Code (for Cereb.Palsy/Septicemia)
**	28)	iI2abb	CCC.CC	ICD-10 Code (for Cereb.Palsy/Septicemia)
**	29)	iI2bbb	CCC.CC	ICD-10 Code (for Cereb.Palsy/Septicemia)
**	30)	iI2cbb	CCC.CC	ICD-10 Code (for Cereb.Palsy/Septicemia)
**	31)	iI2dbb	CCC.CC	ICD-10 Code (for Cereb.Palsy/Septicemia)
**	32)	iI2ebb	CCC.CC	ICD-10 Code (for Cereb.Palsy/Septicemia)
**	33)	iI2fbb	CCC.CC	ICD-10 Code (for Cereb.Palsy/Septicemia)
**	34)	iJ2h	01234	Delusions
**	35)	iJ2i	01234	Hallucinations
**	36)	iJ2j	01234	Aphasia (S)
**	37)	iJ2n	01234	Vomiting
**	38)	iJ2q	01234	Fever (S)
**	39)	iJ2r	01234	Internal bleeding (S)
**	40)	iJ6c	01	End-stage disease, 6 or fewer months to live (S)
**	41)	iK2a	01	Weight loss
**	42)	iK2c	01	Dehydrated (A)
**	43)	iK3	0123456789	Mode of nutritional intake (S,A)
**	44)	iL1	012345	Most severe pressure ulcer (S)
**	45)	iL4	01	Major skin problems (S)
**	46)	iL5	01	Skin tears or cuts (S)
**	47)	iL7	01234	Foot problem (S)
**	48)	iN2a	0123	Chemotherapy (S,A)

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**
** 49) iN2b      0123      Dialysis (S,A)
**
** 50) iN2d      0123      IV medication (S,A)
**
** 51) iN2e      0123      Oxygen therapy (S,A)
**
** 52) iN2f      0123      Radiation (S,A)
**
** 53) iN2g      0123      Suctioning (S,A)
**
** 54) iN2h      0123      Tracheostomy care (S,A)
**
** 55) iN2i      0123      Transfusions (S,A)
**
** 56) iN2j      0123      Ventilator or respirator (S,A)
**
** 57) iN2k      0123      surgical wound care (S,A)
**
** 58) iN2n      0123      Turning/repositioning program (S,A)
**
** 59) iN3gb     0000-9999   Speech: total # minutes (last 7 days) (S)
**
** 60) iN3fb     0000-9999   OT: total # minutes (last 7 day) (S,A)
**
** 61) iN3eb     0000-9999   PT: total # minutes (last 7 days) (S)
**

```

OUTPUT VARIABLES:

```

**
** aNR3H  SEE LIST BELOW  RUG-III/HC GROUP NUMBER
**
**                               3-DIGIT NUMERIC CODE THAT CAN BE USED TO SORT GROUPS
**
** aR3H   SEE LIST BELOW  RUG-III/HC GROUP CODE
**
**                               3-CHARACTER ALPHABETIC CODE
**
**                               FIRST CHARACTER REPRESENTS HIERARCHY GROUP
**
**                               OTHER CHARACTERS RELATE TO ADL LEVELS

```

aNR3H	aR3H	DESCRIPTION
111	RBO	Rehabilitation High / ADL 11 - 18
121	RA2	Rehabilitation Low / ADL 4 - 10 / IADL 2-3
122	RA1	Rehabilitation Low / ADL 4 -10 / IADL 0-1
210	SE3	Extensive Special Care 3 / ADL > 6
220	SE2	Extensive Special Care 2 / ADL > 6
230	SE1	Extensive Special Care 1 / ADL > 6
310	SSB	Special Care / ADL 14 - 18

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**      320      SSA      Special Care / ADL  4 - 13
**      411      CC0      Clin. Complex / ADL 11 - 18
**      421      CB0      Clin. Complex / ADL  6 - 10
**      431      CA2      Clin. Complex / ADL  4 - 5 / IADL 1-3
**      432      CA1      Clin. Complex / ADL  4 - 5 / IADL  0
**      510      IB0      Cognitive Impairment / ADL  6 - 10
**      521      IA2      Cognitive Impairment / ADL  4 - 5 / IADL 1-3
**      522      IA1      Cognitive Impairment / ADL  4 - 5 / IADL  0
**      610      BB0      Behavior Problem / ADL  6 - 10
**      621      BA2      Behavior Problem / ADL  4 - 5 / IADL 1-3
**      622      BA1      Behavior Problem / ADL  4 - 5 / IADL  0
**      710      PD0      Physical Function / ADL 11 - 15
**      720      PC0      Physical Function / ADL  9 - 10
**      730      PB0      Physical Function / ADL  6 -  8
**      741      PA2      Physical Function / ADL  4 - 5 / IADL 1-3
**      742      PA1      Physical Function / ADL  4 - 5 / IADL  0

```

INTERMEDIATE VARIABLES:

```

**      ITEM      VALID VALUES      DESCRIPTION
**      -----
**      Numeric Indicators for qualification in RUG-III clinical categories
**      x_reh      01      rehabilitation
**      x_ext      01      extensive care
**      x_spec     01      special care
**      x_clin     01      clinically complex
**      x_impair   01      impaired cognition
**      x_behav    01      behavior problems
**
**      other variables used in computations
**      x_bedmb    01345      numeric recode of bed mobility ADL
**      x_trans    01345      numeric recode of transfer ADL
**      x_toilt    01345      numeric recode of toileting ADL

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** In SAS, additional statements to designate the source dataset need to precede the
** code provided here. In addition, the variables in that dataset must be mapped to
** the variables used in the code by placing the variable names used in the source
** dataset on the right-hand side of each assignment statement in the section
labeled **;
** 'VARIABLE ASSIGNMENTS.'
**
**
** For programmers developing code in other languages, it is hoped that this
** procedural code can provide sufficiently detailed information about the
** algorithms. It is strongly urged that code be checked on real-life examples.
*****
** THIS INFORMATION IS PROVIDED BY interRAI AS A SERVICE TO ITS USERS. ALTHOUGH
** REASONABLE CARE HAS BEEN TAKEN TO MAKE IT ACCURATE, IT IS PROVIDED "AS IS."
** THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, AS TO ITS ACCURACY.
**
** PLEASE SEND ANY COMMENTS OR CORRECTIONS TO: interRAI_Code@umich.edu
**
*****
** SYNTAX USED IN THIS SAS CODE:
** 1. All lines with an asterisk (*) as the first nonblank character in the line
are **;
** documentation or comment lines. All command lines start with a character
** other than an asterisk.
**
** 2. A semicolon indicates the end of a statement in the SAS code used here, not a
** continuation character as in some other languages.
**
** 3. All variables are represented in small letters, while command words are
** represented in capital letters.
**
** 4. All input interRAI variables are represented with names beginning with a
** lower-case 'i'. Specification of these 'iCODES' are available in the iCODE
** MATRIX, available from interRAI.
**
** 5. All input variables are assumed to be NUMERIC, unless otherwise noted.
**
** 6. All local (non-MDS) variables are NUMERIC and represented in lower case
** letters with a prefix of 'x_' (e.g., x_adlsum).
**
** 7. The only command words and structures used in this SAS code are:
```



```

**      (Ultra High Rehab, Very High Rehab, High Rehab, Medium, Rehab, Low
Rehab, **;
**      Extensive Special Care, Special Care, Clinically Complex, Cognitive
**      ;
**      Impairment, and Behavior Problems) for which a resident qualifies.
**      ;
**      This first stage involves Step I through Step X in the code below.
**      ;
**      2. Classification stage. Scan all of the qualifications for a resident and
**      ;
**      classify the resident into a single clinical category and then classify
**      ;
**      the resident into one of the RUG-III groups contained in that clinical
**      ;
**      category. This second stage comprises Step XI in the code.
**      ;
**      ;
**      The RUG-III 1997 Update classifies a resident into the Extensive Special Care
**      ;
**      groups based on consideration of not only qualification for the Extensive Special
**      ;
**      Care clinical category, but also qualification for the Special Care, Clinically
**      ;
**      Complex, and Cognitive Impairment Clinical categories. This feature necessitates
**      ;
**      the stage two process.
**      ;
*****
** STEPS IN COMPUTING RUG-III/HC
**      ;
**      1) <CRIPPLE> MDS (NH) VARIABLES NOT AVAILABLE IN MDS-HC - SET THEM TO NULL
**      ;
**      VALUE (USUALLY ZERO)
**      ;
**      2) DEVELOP IADL INDEX
**      ;
**      3) COMPUTE NURSING HOME RUG-III SCORE, MODIFICATIONS INCLUDE
**      ;
**      - FEWER REHAB CATEGORIES, NOW BASED ONLY ON ADLS
**      ;
**      - NO SPLITS BY NURSING REHABILITATION OR DEPRESSION
**      ;
**      - NEW IADL SPLITS IN THE RA, CA, IA, BA, AND A GROUPS
**      ;
**      FOR DETAILS, SEE ARTICLE BY BJORKGREN, FRIES, SHUGARMAN -
**      ;
**      TESTING A RUG-III BASED CASE-MIX SYSTEM FOR HOME CARE
**      ;
*****END OF
DOCUMENTATION*****;
**      WARNINGS
**      ;
**      BE SURE TO PERFORM RANGE CHECKS ON ALL GROUPER VARIABLES
**      ;
**      IF ANY ARE OUT OF RANGE OR MISSING, THE OUTPUT SHOULD BE SET TO MISSING
**      ;
**      IN ADDITION, THE VARIABLE VALUE CHECK BELOW WILL CAUSE MISSING OUTPUT FOR
**      ;
**      OBSERVATIONS WITH INVALID OR MISSING VALUES
**      ;
**      ;

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```
**;  
** BEFORE RUNNING THIS CODE, BE SURE TO RUN:  
**;  
**          SCPS (Cognitive Performance Scale)  
**;  
**
```

```
**;  
*****BEGINNING OF SAS  
CODE*****;
```

```
** DATA STEP STARTS HERE **;
```

```
** INCLUDE HERE CODE FOR COGNITIVE PERFORMANCE SCALE (SCPS) **;
```

```
** ++++++  
** Step 0. VARIABLE ASSIGNMENTS AND VARIABLE VALUE CHECK.  
** ++++++
```

```
** VARIABLE ASSIGNMENTS
```

```
**;  
** IF NECESSARY, CHANGE SECOND VARIABLE TO CORRECT LOCAL VARIABLE NAME CHA  
**;  
** NOTE: RUG-III/HC CAN BE CALCULATED ON CHA ASSESSMENTS WHICH INCLUDE THE  
**;  
** CHA FUNCTIONAL ASSESSMENT. AN APPROXIMATION IS POSSIBLE, HOWEVER BY SETTING  
**;  
** TO ZERO THE VARIABLES INDICATED IN THE LIST OF VARIABLES ABOVE WITH A '(S)'.  
**;  
** AN APPROXIMATION IS ALSO POSSIBLE SIMILARLY FOR THE INTERRAI AL, BY SETTING TO  
**;  
** ZERO THE VARIABLES INDICATED BY A '(A)'  
**;
```

```
** NOTE: BE SURE THE VARIABLES TO COMPUTE THE SCPS SCALE ARE AVAILABLE  
**;
```

```
iE3a = iE3a ;  
iE3b = iE3b ;  
iE3c = iE3c ;  
iE3d = iE3d ;  
iE3e = iE3e ;  
iE3f = iE3f ;  
iG1aa = iG1aa ;  
iG1da = iG1da ;  
iG1ea = iG1ea ;  
iG2g = iG2g ;  
iG2h = iG2h ;  
iG2i = iG2i ;  
iG2j = iG2j ;  
iI1e = iI1e ;  
iI1f = iI1f ;  
iI1i = iI1i ;  
iI1q = iI1q ;  
iI1t = iI1t ;  
iI2aba = iI2aba ;  
iI2bba = iI2bba ;  
iI2cba = iI2cba ;  
iI2dba = iI2dba ;  
iI2eba = iI2eba ;  
iI2fba = iI2fba ;  
iI2abb = iI2abb ;  
iI2bbb = iI2bbb ;
```

```
**USE EITHER THESE ICD-10 CODES OR THE ICD-9 CODES ABOVE**;  
**USE EITHER THESE ICD-10 CODES OR THE ICD-9 CODES ABOVE**;
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```

iI2cbb = iI2cbb ; **USE EITHER THESE ICD-10 CODES OR THE ICD-9 CODES ABOVE***;
iI2dbb = iI2dbb ; **USE EITHER THESE ICD-10 CODES OR THE ICD-9 CODES ABOVE***;
iI2ebb = iI2ebb ; **USE EITHER THESE ICD-10 CODES OR THE ICD-9 CODES ABOVE***;
iI2fbb = iI2fbb ; **USE EITHER THESE ICD-10 CODES OR THE ICD-9 CODES ABOVE***;
iJ2h   = iJ2h   ;
iJ2i   = iJ2i   ;
iJ2j   = iJ2j   ;
iJ2n   = iJ2n   ;
iJ2q   = iJ2q   ;
iJ2r   = iJ2r   ;
iJ6c   = iJ6c   ;
iK2a   = iK2a   ;
iK2c   = iK2c   ;
iK3    = iK3    ;
iL1    = iL1    ;
iL4    = iL4    ;
iL5    = iL5    ;
iL7    = iL7    ;
iN2a   = iN2a   ;
iN2b   = iN2b   ;
iN2d   = iN2d   ;
iN2e   = iN2e   ;
iN2f   = iN2f   ;
iN2g   = iN2g   ;
iN2h   = iN2h   ;
iN2i   = iN2i   ;
iN2j   = iN2j   ;
iN2k   = iN2k   ;
iN2n   = iN2n   ;
iN3gb  = iN3gb  ;
iN3fb  = iN3fb  ;
iN3eb  = iN3eb  ;
SCPS   = SCPS   ;

```

** VARIABLE VALUE CHECK **;

```

if (SCPS = 6 or (SCPS in (0,1,2,3,4,5)
  and iE3a in (0,1,2,3) and iE3b in (0,1,2,3) and iE3c in (0,1,2,3)
  and iE3d in (0,1,2,3) and iE3e in (0,1,2,3) and iE3f in (0,1,2,3)))
  and iG1aa in (0,1,2,3,4,5,6,8) and iG1da in (0,1,2,3,4,5,6,8)
  and iG1ea in (0,1,2,3,4,5,6,8)
  and iG2g in (0,1,2,3,4,5,6,8) and iG2h in (0,1,2,3,4,5,6,8)
  and iG2i in (0,1,2,3,4,5,6,8) and iG2j in (0,1,2,3,4,5,6,8)
  and iI1e in (0,1,2,3) and iI1f in (0,1,2,3) and iI1i in (0,1,2,3)
  and iI1q in (0,1,2,3) and iI1t in (0,1,2,3)
  and iJ2h in (0,1,2,3,4) and iJ2i in (0,1,2,3,4) and iJ2j in (0,1,2,3,4)
  and iJ2n in (0,1,2,3,4) and iJ2q in (0,1,2,3,4) and iJ2r in (0,1,2,3,4)
  and iJ6c in (0,1) and iK2a in (0,1) and iK2c in (0,1)
  and iK3 in (0,1,2,3,4,5,6,7,8,9)
  and iL1 in (0,1,2,3,4,5) and iL4 in (0,1)
  and iL5 in (0,1) and iL7 in (0,1,2,3,4)
  and iN2a in (0,1,2,3) and iN2b in (0,1,2,3) and iN2d in (0,1,2,3)
  and iN2e in (0,1,2,3) and iN2f in (0,1,2,3) and iN2g in (0,1,2,3)
  and iN2h in (0,1,2,3) and iN2i in (0,1,2,3) and iN2j in (0,1,2,3)
  and iN2k in (0,1,2,3) and iN2n in (0,1,2,3)
  and (0 <= iN3eb <=999) and (0 <= iN3fb <=999) and (0 <= iN3gb <=999)
  then do;

```

```

** ++++++ ;
** Step I. Initialize needed variables. ;
** ++++++ ;

```

** Initialize clinical category indicators **;

```

x_reh = 0;
x_ext = 0;
x_spec = 0;
x_clin = 0;
x_impair = 0;
x_behav = 0;

```

```

** ++++++
** Step II. Calculate RUG-III/HC IADL Index.
** The IADL index is used in splitting the lowest Clinically Complex,
** Impaired Cognition, Behavior Problems, and Reduced Physical
** Function RUG-III/HC categories. The IADL index requires
** scoring conversion for 3 different ADLs and then summation.
** The crosswalk from the MDS-HC equates the following levels:
** H1aa, H1da, H1ea are changed to iG1aa, iG1da, iG1ea as follows:
** H1aa ----> iG1aa
** 0 (independent) 0 (independent)
** 1 (some help) 1,2,3,4 (help, supervision, limited, extensive)
** 2 (full help) 5 (maximal assistance)
** 3 (by others) 6 (total dependence)
** 8 (activity did not occur) 8 (activity did not occur)
** For RUG-III/HC we count the number of these three at the level 'full help'
** or more on the RAI-HC which corresponds to iG1aa of 5 or more
** ++++++

```

```
x_iadls = .;
```

```

if iG1aa in (0,1,2,3,4) then x_meal=0;
else if iG1aa in (5,6,8) then x_meal=1;

```

```

if iG1da in (0,1,2,3,4) then x_mmed=0;
else if iG1da in (5,6,8) then x_mmed=1;

```

```

if iG1ea in (0,1,2,3,4) then x_phon=0;
else if iG1ea in (5,6,8) then x_phon=1;

```

```
x_iadls = x_meal + x_mmed + x_phon;
```

```

** ++++++
** Step III. Calculate RUG-III ADL Index.
** The ADL index is required for use in splitting the Rehabilitation,
** Special Care, Clinically Complex, Impaired Cognition, Behavior
** Problems, and Reduced Physical Function RUG-III clinical
** categories. The ADL index requires scoring conversion for
** 4 different ADLs and then summation.
** ++++++

```

```
x_adlsum = .;
```

```

** ADL scoring conversion for Bed mobility
IF ( iG2i = 0 OR iG2i = 1 OR iG2i = 2 ) THEN x_bedmb = 1;
ELSE IF ( iG2i = 3 ) THEN x_bedmb = 3;
ELSE IF ( iG2i = 4 ) THEN x_bedmb = 4;
ELSE IF ( iG2i = 5 OR iG2i = 6 OR iG2i = 8 ) THEN x_bedmb = 5;

```

```

** -----
** ADL scoring conversion for Transfer
IF ( iG2g = 0 OR iG2g = 1 OR iG2g = 2 ) THEN x_trans = 1;
ELSE IF ( iG2g = 3 ) THEN x_trans = 3;
ELSE IF ( iG2g = 4 ) THEN x_trans = 4;
ELSE IF ( iG2g = 5 OR iG2g = 6 OR iG2g = 8 ) THEN x_trans = 5;

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** -----
** ADL scoring conversion for Toilet Use
IF      ( iG2h = 0 OR iG2h = 1 OR iG2h = 2 )      THEN x_toilt = 1;
ELSE IF ( iG2h = 3 )                              THEN x_toilt = 3;
ELSE IF ( iG2h = 4 )                              THEN x_toilt = 4;
ELSE IF ( iG2h = 5 OR iG2h = 6 OR iG2h = 8 )      THEN x_toilt = 5;

```

```

** -----
** Code parenteral\enteral intake level--used for Eating scoring conversion and;
** later for Special Care and Clinically Complex qualification.
**   x_intake = 1 if (1) 51% or more of total calories are received
**           through parenteral\enteral intake (iK5) or (2) 26% to 50%
**           of total calories received through parenteral\enteral
**           intake (iK5) and fluid intake is 501 or more cc per day
**           (iK2b).
**           NOTE: The interRAI HC does not have any measure of intake,
**           so assume that x_intake=1 in the following code
**   x_intake = 0 if parenteral\enteral intake is at a lower level (including
**           none).

```

x_intake = 1;

```

** ADL scoring conversion for Eating
IF      ( iK3 = 6 OR iK3 = 7 OR iK3 = 8 ) OR (iK3 = 5 AND x_intake = 1 )
                                           THEN x_eatng = 3;
ELSE IF ( iG2j = 0 OR iG2j = 1 OR iG2j = 2 )      THEN x_eatng = 1;
ELSE IF ( iG2j = 3 )                              THEN x_eatng = 2;
ELSE IF ( iG2j = 4 OR iG2j = 5 OR iG2j = 6 OR iG2j = 8 ) THEN x_eatng = 3;

```

```

** -----
** Sum the converted ADL scores to x_adlsum;
x_adlsum = x_bedmb + x_trans + x_toilt + x_eatng;

```

```

** ++++++
** Step IV. Determine Rehab variable need for Rehab categories
**
**       Variables needed to determine Rehab clinical hierarchy
**       qualification for Standard rehab classification
**       - Total minutes of rehab therapy received (x_th_min)
** OTHER RUG-III REHAB VARIABLES NOT USED
** ++++++

```

```

** -----
** Determine x_th_min -- the number of minutes of rehab therapy received.

```

x_th_min = 0;

```

** Add speech therapy minutes
IF ( iN3gb > 0 )      THEN x_th_min = x_th_min + iN3gb;

```

```

** Add occupational therapy minutes
IF ( iN3fb > 0 )      THEN x_th_min = x_th_min + iN3fb;

```

```

** Add physical therapy minutes
IF ( iN3eb > 0 )      THEN x_th_min = x_th_min + iN3eb;

```

IF x_th_min >= 120 THEN x_reh = 1;

```

** ++++++
** Step V. Test Extensive Care qualification.
** ++++++

```

```

** -----
** Determine qualification for Extensive Care.
** Check for required Extensive Care clinical indicators.
** -----
** Resident qualifies for Extensive Care category on the basis of clinical
** indicators.
**   Qualifications
**     Parenteral/IV feedings (iK3) OR IV medication (iN2d) OR
**     suctioning (iN2g) OR tracheostomy care (iN2h) OR
**     ventilator or respirator (iN2j).
** -----

```

```

IF ( iK3 = 7 OR iK3 = 8 OR
     iN2d = 2 OR iN2d = 3 OR
     iN2g = 2 OR iN2g = 3 OR
     iN2h = 2 OR iN2h = 3 OR
     iN2j = 2 OR iN2j = 3)
THEN x_ext = 1;

```

```

** ++++++
** Step VI. Test Special Care qualification.
** ++++++
** Code Cerebral Palsy from ICD-9 Code (Note: adjust if using ICD-10)
** Assumes that ICD-9 is left justified character format xxx.xx and that you
** can test for only xxx.x (omitting final digit). In SAS, this is handled
** by the SUBSTR function below, which extracts the first 5 characters of
** iI2aba.

```

```

** Code Cerebral Palsy from ICD-9 Code

```

```

x_cpal=0;
IF SUBSTR(LEFT(iI2aba),1,3) = '343' THEN x_cpal = 1;
IF SUBSTR(LEFT(iI2bba),1,3) = '343' THEN x_cpal = 1;
IF SUBSTR(LEFT(iI2cba),1,3) = '343' THEN x_cpal = 1;
IF SUBSTR(LEFT(iI2dba),1,3) = '343' THEN x_cpal = 1;
IF SUBSTR(LEFT(iI2eba),1,3) = '343' THEN x_cpal = 1;
IF SUBSTR(LEFT(iI2fba),1,3) = '343' THEN x_cpal = 1;

```

```

** Code Cerebral Palsy from ICD-10 Code

```

```

** CEREBRAL PALSY IS ICD-10 CODES G80.x
IF SUBSTR(iI2abb,1,3)= 'G80' THEN x_cpal=1;
IF SUBSTR(iI2bbb,1,3)= 'G80' THEN x_cpal=1;
IF SUBSTR(iI2cbb,1,3)= 'G80' THEN x_cpal=1;
IF SUBSTR(iI2dbb,1,3)= 'G80' THEN x_cpal=1;
IF SUBSTR(iI2ebb,1,3)= 'G80' THEN x_cpal=1;
IF SUBSTR(iI2fbb,1,3)= 'G80' THEN x_cpal=1;

```

```

** Code Septicemia from ICD-9 Code

```

```

** http://icd9cm.chrisendres.com/index.php?action=search&srchtext=sepsis
** *NOTE: ELIMINATED CODES THAT INDICATE ADDITIONAL 'SEPTIC' CODES TO BE DONE
** ICD-9 CODES: 003.1, 022.3, 027.0, 027.1, 038., 112.5,
**               995.91, 995.92, 999.32, 999.34

```

```

x_sept=0;

```

```

IF SUBSTR(LEFT(iI2aba),1,3) = '038' THEN x_sept = 1;
IF SUBSTR(LEFT(iI2bba),1,3) = '038' THEN x_sept = 1;
IF SUBSTR(LEFT(iI2cba),1,3) = '038' THEN x_sept = 1;
IF SUBSTR(LEFT(iI2dba),1,3) = '038' THEN x_sept = 1;
IF SUBSTR(LEFT(iI2eba),1,3) = '038' THEN x_sept = 1;
IF SUBSTR(LEFT(iI2fba),1,3) = '038' THEN x_sept = 1;

```

```

RFP 4
IF SUBSTR(iI2aba,1,5) in ('003.1', '022.3', '027.0', '027.1', '112.5') THEN
x_sept=1;
IF SUBSTR(iI2bba,1,5) in ('003.1', '022.3', '027.0', '027.1', '112.5') THEN
x_sept=1;
IF SUBSTR(iI2cba,1,5) in ('003.1', '022.3', '027.0', '027.1', '112.5') THEN
x_sept=1;
IF SUBSTR(iI2dba,1,5) in ('003.1', '022.3', '027.0', '027.1', '112.5') THEN
x_sept=1;
IF SUBSTR(iI2eba,1,5) in ('003.1', '022.3', '027.0', '027.1', '112.5') THEN
x_sept=1;
IF SUBSTR(iI2fba,1,5) in ('003.1', '022.3', '027.0', '027.1', '112.5') THEN
x_sept=1;

IF SUBSTR(iI2aba,1,6) in ('995.91', '995.92', '999.32', '999.34') THEN x_sept=1;
IF SUBSTR(iI2bba,1,6) in ('995.91', '995.92', '999.32', '999.34') THEN x_sept=1;
IF SUBSTR(iI2cba,1,6) in ('995.91', '995.92', '999.32', '999.34') THEN x_sept=1;
IF SUBSTR(iI2dba,1,6) in ('995.91', '995.92', '999.32', '999.34') THEN x_sept=1;
IF SUBSTR(iI2eba,1,6) in ('995.91', '995.92', '999.32', '999.34') THEN x_sept=1;
IF SUBSTR(iI2fba,1,6) in ('995.91', '995.92', '999.32', '999.34') THEN x_sept=1;

```

```

** Code Septicemia from ICD-10 Code ;
** ICD-10 CODES: A40 A41 R65 B00.7 A02.1 A22.7 A24.1 A26.7 A32.7 A42.7 B37.7 ;
IF SUBSTR(iI2abb,1,3) in ('A40', 'A41', 'R65') THEN x_sept=1;
IF SUBSTR(iI2bbb,1,3) in ('A40', 'A41', 'R65') THEN x_sept=1;
IF SUBSTR(iI2cbb,1,3) in ('A40', 'A41', 'R65') THEN x_sept=1;
IF SUBSTR(iI2dbb,1,3) in ('A40', 'A41', 'R65') THEN x_sept=1;
IF SUBSTR(iI2ebb,1,3) in ('A40', 'A41', 'R65') THEN x_sept=1;
IF SUBSTR(iI2fbb,1,3) in ('A40', 'A41', 'R65') THEN x_sept=1;

IF SUBSTR(iI2abb,1,5) in ('B00.7', 'A02.1', 'A22.7', 'A24.1', 'A26.7',
'A32.7', 'A42.7', 'B37.7') THEN x_sept=1;
IF SUBSTR(iI2bbb,1,5) in ('B00.7', 'A02.1', 'A22.7', 'A24.1', 'A26.7',
'A32.7', 'A42.7', 'B37.7') THEN x_sept=1;
IF SUBSTR(iI2cbb,1,5) in ('B00.7', 'A02.1', 'A22.7', 'A24.1', 'A26.7',
'A32.7', 'A42.7', 'B37.7') THEN x_sept=1;
IF SUBSTR(iI2dbb,1,5) in ('B00.7', 'A02.1', 'A22.7', 'A24.1', 'A26.7',
'A32.7', 'A42.7', 'B37.7') THEN x_sept=1;
IF SUBSTR(iI2ebb,1,5) in ('B00.7', 'A02.1', 'A22.7', 'A24.1', 'A26.7',
'A32.7', 'A42.7', 'B37.7') THEN x_sept=1;
IF SUBSTR(iI2fbb,1,5) in ('B00.7', 'A02.1', 'A22.7', 'A24.1', 'A26.7',
'A32.7', 'A42.7', 'B37.7') THEN x_sept=1;

```

```

** ----- ;
** Check for required Special Care clinical indicators ;
** ----- ;
** Resident qualifies for Special Care category on the basis of ;
** clinical indicators. ;
** Qualifications (any one sufficient) ;
** 1. Stage 3 or 4 pressure ulcer (iL1) (Note: Do not have ;
** count of ulcers), ;
** AND ;
** turning and positioning (iN2n). ;
** 2. Feeding tube (iK3) WITH parenteral/enteral intake ;
** (x_intake) AND aphasia (iJ2j). ;
** (NOTE: DO NOT HAVE VARIABLES FOR x_intake, SO ASSUME =1 ;
** ;
** 3. Major skin problems (iL4) or skin tears or cuts (iL5), ;
** with wound care (iN2k). ;
** 4. Respiratory therapy for 7 days (iN3ia) - MISSING ON ;
** interRAI HC. ;
** 5. Cerebral palsy (x_cpal) AND ADL score of 10 or more ;
** (x_adlsum). ;

```

- ** 6. Fever (ij2q)
- ** AND
- ** vomiting (ij2n) OR weight loss (ik2a) OR tube feeding
- ** (ik3) WITH high parenteral/enteral intake (x_intake)
- ** OR pneumonia (iilq) OR dehydrated (ik2c).
- ** 7. Multiple sclerosis (iilf) AND ADL score of 10 or more
- ** (x_adlsum).
- ** 8. Quadriplegia (iili) AND ADL score of 10 or more
- ** (x_adlsum).
- ** 9. Radiation therapy (in2f).

```

IF ( ( (iL1 = 3 OR iL1 = 4) AND (in2n = 2 OR in2n = 3) )
OR ( (ik3 = 6 OR (ik3=5 AND x_intake = 1)) AND
      (ij2j = 2 OR ij2j = 3 OR ij2j = 4) ) )
OR ( (iL4 = 1 OR iL5 = 1) AND (in2k = 2 OR in2k = 3) )
OR (x_cpal=1 AND x_adlsum >= 10)
OR ( (ij2q =2 OR ij2q = 3 OR ij2q = 4)
      AND
      ( (ij2n =2 OR ij2n = 3 OR ij2n = 4)
        OR ik2a = 1
        OR (ik3 = 6 OR (ik3=5 AND x_intake = 1))
        OR (iilq = 1 OR iilq = 2 OR iilq = 3 OR ik2c=1) ) ) )
OR ( (iilf = 1 OR iilf = 2 OR iilf = 3) AND x_adlsum >= 10)
OR ( (iili = 1 OR iili = 2 OR iili = 3) AND x_adlsum >= 10)
OR ( in2f = 2 OR in2f =3) )

```

```

THEN
  x_spec = 1;

```

```

** ++++++
** Step VII. Test Clinically Complex qualification.
** ++++++

```

```

** -----
** Calculate x_coma indicating whether the resident is comatose with qualifiers;
** x_coma = 1 if resident is comatose (ic1 = 5) and not awake most of the;
** time (is3=1,2, or 3) and ADL dependent (ig2i, ig2g, ig2j,
** and ig2h all have values of 6 or 8).
** = 0 otherwise.
** NOTE: interRAI HC DOES NOT HAVE IS3

```

```

x_coma = 0;

```

```

IF ( ic1 = 5
      AND ( ig2i = 6 OR ig2i = 8)
      AND ( ig2g = 6 OR ig2g = 8)
      AND ( ig2j = 6 OR ig2j = 8)
      AND ( ig2h = 6 OR ig2h = 8) )

```

```

THEN
  x_coma = 1;

```

```

** -----
** Check for Clinically Complex qualification.
** Resident qualifies for Clinically Complex category on the basis of
** clinical indicators.

```

- ** -----
- ** Qualifications (any one sufficient)
- ** 1. Feeding tube (ik3) WITH high parenteral/enteral
- ** intake (x_intake).
- ** (NOTE: DO NOT HAVE VARIABLES FOR x_intake, SO ASSUME =1
- ** 2. Comatose (ic1=5) AND not awake (is3) AND
- ** ADL dependent (ig2i, ig2g, ig2j, ig2h).
- ** NOTE: is3 NOT AVAILABLE ON interRAI HC

RFP 4

- ** 3. Septicemia (x_sept).
- ** 4. Burns--second or third degree (not available separately).
- ** 5. Dehydration (iK2c).
- ** 6. Hemiplegia/hemiparesis (iI1e) and ADL score of 10 or more (x_adlsum).
- ** 7. Internal bleeding (iJ2r).
- ** 8. Pneumonia (iI1q).
- ** 9. End stage disease (iJ6c).
- ** 10. Chemotherapy (iN2a).
- ** 11. Dialysis (iN2b).
- ** 12. Physician order changes (iN8) on 4 or more days AND physician visits (iN7) on 1 or more days.
- ** 13. Physician order changes (iN8) on 2 or more days AND physician visits (iN7) on 2 or more days.
- ** NOTE: DO NOT HAVE PHYSICIAN ORDERS OR VISITS ON INTERRAI HC
- ** 14. Diabetes (iI1t) AND injections (not available) on 7 days AND physician order changes (iN8) on 2 or more days (NOT AVAILABLE). (Eventually, get insulin injections from drug list.)
- ** 15. Transfusions (iN2i).
- ** 16. Oxygen therapy (iN2e).
- ** 17. Infection on foot (m6b) OR open lesion on foot (m6c) AND application of dressings to foot (m6f) Replaced by Foot problems that limit/prevent walking (iL7).

```

IF ( (iK3=6) OR (iK3 = 5 AND x_intake = 1)
OR x_coma = 1
OR x_sept = 1
OR iK2c = 1
OR ( ( iI1e = 1 OR iI1e = 2 OR iI1e = 3) AND x_adlsum >= 10)
OR ( iJ2r = 2 OR iJ2r = 3 OR iJ2r = 4)
OR ( iI1q = 1 OR iI1q = 2 OR iI1q = 3)
OR iJ6c = 1
OR ( iN2a = 2 OR iN2a = 3)
OR ( iN2b = 2 OR iN2b = 3)
OR ( iI1t = 1 OR iI1t = 2 OR iI1t = 3)
OR ( iN2i = 2 OR iN2i = 3)
OR ( iN2e = 2 OR iN2e = 3)
OR ( iL7 = 2 OR iL7 = 3) )

```

THEN x_clin = 1;

** ++++++;
** Step VIII. Determine depression variable (x_depres) - OMITTED IN RUG-III/HC;
** ++++++

** ++++++;
** Step IX. Test Cognitive Impairment qualification.
** ++++++

** Note Use interRAI Cognitive Performance Scale (SCPS)

** Be sure to run SCPS code before running this program

** -----
** Determine Cognitive Impairment qualification.
** Qualification if Cognitive Performance Scale is 3 or more.

```

IF SCPS >= 3 THEN x_impair = 1;
ELSE x_impair = 0;

```

RFP 4

```

** ++++++
** Step X. Test Behavior Problems qualification.
** ++++++

```

```

** -----
** NOTE: THE FOLLOWING DOCUMENTATION WAS CORRECTED 09/08/15 TO INDICATE THAT
** THE BEHAVIOR VARIABLES iE3a-f WERE SCORED FOR 1 OR MORE DAYS, NOT 4
** Check for Behavior Problems qualification.

```

- ```

** -----
** Behavior Problems Qualifications (any one sufficient)
** 1. Wandering occurred on 1 or more days (iE3a).
** 2. Verbally abusive behavior occurred on 1 or more
** days (iE3b).
** 3. Physically abusive behavior occurred on 1 or
** more days (iE3c).
** 4. Socially inappropriate/disruptive behavior
** occurred on 1 or more days (iE3d).
** 5. Resident resisted care on 1 or more days (iE3e).
** 6. Sexually inappropri. Behav 1 or more days (iE3f)
** 6. Hallucinations (ij2i).
** 7. Delusions (ij2h).

```

```

IF ((iE3a = 2 OR iE3a = 3)
OR (iE3b = 2 OR iE3b = 3)
OR (iE3c = 2 OR iE3c = 3)
OR (iE3d = 2 OR iE3d = 3)
OR (iE3e = 2 OR iE3e = 3)
OR (iE3f = 2 OR iE3f = 3)
OR (ij2i = 2 OR ij2i = 3 OR ij2i = 4)
OR (ij2h = 2 OR ij2h = 3 OR ij2h = 4))
THEN
 x_behav = 1;

```

```

** ++++++
** Step XI. Classify into RUG-III/HC Groups
** ++++++
** NOTE: THE ADL INDEX USED TO DERIVE THE RUG-III/HC SYSTEM BASED ON THE
** RAI-HC DID NOT HAVE THE ADL SUPPORT ITEMS, AND THUS RANGED FROM
** 4-15 (RATHER THAN 4-18). ON ALL INTERRAI SUITE INSTRUMENTS, THE
** ADL INDEX (x_adlsum) INCORPORATES SUPPORT CONCEPTS AND CAN RANGE
** FROM 4-18. HOWEVER, TO REMAIN CONSISTENT WITH THE DERIVATION WORK
** WE CONSIDER EQUIVALENT ALL INDEX VALUES FROM 15-18.

```

```

** -----
** Classify into Rehab Groups **
** All final splits based on ADL sum (x_adlsum) and iADL index (x_iadls).

```

```

IF x_reh = 1 THEN DO;
 IF (11 <= x_adlsum AND x_adlsum <= 18) THEN aR3H = 'RB0';
 ELSE IF (4 <= x_adlsum AND x_adlsum <= 10) THEN DO;
 IF x_iadls > 1 THEN aR3H = 'RA2';
 ELSE aR3H = 'RA1';
 END;
END;

```

```

** -----
** Classify into Extensive Care Groups **
** To be classified as Extensive Care a resident must qualify on the
** basis of having Extensive Care clinical indicators (x_ext = 1) and

```

```

** an ADL sum of 7 or more
**
** Note that residents who have Extensive Care clinical indicators but
** have too low an ADL score (6 or less) are classified as Special Care
** rather than Extensive Care. (THIS IS DONE HERE TO REMAIN COMPATIBLE
** WITH THE RUG-III V5.20 SPECIFICATION - EARLIER VERSIONS MOVED THESE
** OBSERVATIONS TO THE CLINICALLY COMPLEX CATEGORY, AS WELL, THE COUNT
** USED TO SPLIT THE EXTENSIVE CARE CATEGORY IS MODIFIED FROM THE
** ORIGINAL.)
**
** Split into Extensive Care groups is based on a count (x_ext_ct) of other
** hierarchy category qualifications plus existence of
** parenteral/IV feeding (ik3) and IV medications (in2d)

```

```
ELSE IF (x_ext = 1 AND x_adlsum >=7) THEN DO;
```

```

 x_ext_ct = x_spec + x_clin + x_impair;
 IF ik3 = 8 THEN x_ext_ct = x_ext_ct + 1;
 IF in2d in (2,3) THEN x_ext_ct = x_ext_ct + 1;

 IF (4 <= x_ext_ct AND x_ext_ct <= 5) THEN ar3H= 'SE3';
 ELSE IF (2 <= x_ext_ct AND x_ext_ct <= 3) THEN ar3H= 'SE2';
 ELSE IF (0 <= x_ext_ct AND x_ext_ct <= 1) THEN ar3H= 'SE1';

```

```
END;
```

```

** -----
** Classify into Special Care Groups **

```

```

** To be classified as Special Care a resident must satisfy one of the
** two following conditions
** 1. The resident has both Special Care clinical indicators (x_spec = 1)
** and an ADL sum of 7 or more.
** 2. The resident has both Extensive Care indicators (x_ext = 1) and
** was not already classified as Extensive (i.e., an ADL sum of 6
** or less).

```

```

** Note that residents who have Special Care clinical indicators but
** have too low an ADL score (6 or less) are classified as Clinically
** Complex rather than Special Care.

```

```

** Split into Special Care groups is based on ADL sum, slightly different than
** RUG-III

```

```
ELSE IF ((x_spec = 1 AND x_adlsum >= 7) OR x_ext = 1) THEN DO;
```

```

 IF (14 <= x_adlsum AND x_adlsum <= 18) THEN ar3H= 'SSB';
 ELSE IF (4 <= x_adlsum AND x_adlsum <= 13) THEN ar3H= 'SSA';

```

```
END;
```

```

** -----
** Classify into Clinically Complex Groups **

```

```

** To be classified as Clinically Complex a resident must satisfy one of the
** two following conditions
** 1. The resident has Clinically Complex clinical indicators (x_clin = 1),
** 2. The resident has both Special Care indicators (x_spec = 1) and
** was not already classified as Special Care (i.e., an ADL sum of 6
** or less).

```

```

** Split into Clinically Complex groups is based on ADL sum and IADL sum.

```

```
ELSE IF (x_clin = 1 OR x_spec = 1) THEN DO;
```

```

 IF (11 <= x_adlsum AND x_adlsum <= 18) THEN ar3H= 'CC0';

```

```

 RFP 4
ELSE IF (6 <= x_adlsum AND x_adlsum <= 10) THEN ar3H= 'CB0';
ELSE IF (4 <= x_adlsum AND x_adlsum <= 5) THEN DO;
 IF x_iadls >= 1 THEN ar3H= 'CA2';
 ELSE ar3H= 'CA1';
END;
END;

** -----
** Classify into Cognitive Groups **
**
** To be classified as Cognitive Impairment the resident has Cognitive
** Impairment indicators (x_impair = 1) and an ADL sum of 10 or less
**
** Split into Impaired Cognitive groups is based on ADL sum and iADL sum
** (Note: splits of nursing rehabilitation not performed)
ELSE IF (x_impair = 1 AND 4 <= x_adlsum AND x_adlsum <= 10) THEN DO;
 IF (6 <= x_adlsum AND x_adlsum <= 10) THEN ar3H= 'IB0';
 ELSE IF (4 <= x_adlsum AND x_adlsum <= 5) THEN DO;
 IF x_iadls >= 1 THEN ar3H= 'IA2';
 ELSE ar3H= 'IA1';
 END;
END;

** -----
** Classify into Behavioral Problems Groups **
**
** To be classified as Behavior Problems the resident has Behavior
** Problems indicators (x_behav = 1) and an ADL sum of 10 or less
**
** Split into Behavior Problems groups is based on ADL sum and IADL sum
** (Note: splits of nursing rehabilitation not performed)
ELSE IF (x_behav = 1 AND 4 <= x_adlsum AND x_adlsum <= 10) THEN DO;
 IF (6 <= x_adlsum AND x_adlsum <= 10) THEN ar3H= 'BB0';
 ELSE IF (4 <= x_adlsum AND x_adlsum <= 5) THEN DO;
 IF x_iadls >= 1 THEN ar3H= 'BA2';
 ELSE ar3H= 'BA1';
 END;
END;

** -----
** Classify into Physical Groups**
**
** A resident is classified as reduced Physical Function if a previous
** hierarchical classification has not been made
**
** Split into Physical Function groups is based on ADL sum and IADL sum
** (Note: splits of nursing rehabilitation not performed)
ELSE IF (11 <= x_adlsum AND x_adlsum <= 18) THEN ar3H= 'PD0';
ELSE IF (9 <= x_adlsum AND x_adlsum <= 10) THEN ar3H= 'PC0';
ELSE IF (6 <= x_adlsum AND x_adlsum <= 8) THEN ar3H= 'PB0';
** BELOW FOR 4<=x_adlsum<=5;
ELSE DO;
 IF x_iadls >= 1 THEN ar3H= 'PA2';
 ELSE ar3H= 'PA1';
END;
END;

```

```

** RUG-III/HC CLASSIFICATION COMPLETE ;
** NOW ADD NUMERICAL GROUP IDENTIFIERS **;
** NOTE THAT THESE ARE DIFFERENT THAN PREVIOUS RUG-III/HC VERSIONS, BUT NOW **;
** CAN BE SORTED TO PUT RUG-III/V2 GROUPS IN THEIR LOGICAL ORDER **;

IF aR3H = 'RB0' THEN aNR3H = 111 ;
ELSE IF aR3H = 'RA2' THEN aNR3H = 121 ;
ELSE IF aR3H = 'RA1' THEN aNR3H = 122 ;
ELSE IF aR3H = 'SE3' THEN aNR3H = 210 ;
ELSE IF aR3H = 'SE2' THEN aNR3H = 220 ;
ELSE IF aR3H = 'SE1' THEN aNR3H = 230 ;
ELSE IF aR3H = 'SSB' THEN aNR3H = 310 ;
ELSE IF aR3H = 'SSA' THEN aNR3H = 320 ;
ELSE IF aR3H = 'CC0' THEN aNR3H = 411 ;
ELSE IF aR3H = 'CB0' THEN aNR3H = 421 ;
ELSE IF aR3H = 'CA2' THEN aNR3H = 431 ;
ELSE IF aR3H = 'CA1' THEN aNR3H = 432 ;
ELSE IF aR3H = 'IB0' THEN aNR3H = 510 ;
ELSE IF aR3H = 'IA2' THEN aNR3H = 521 ;
ELSE IF aR3H = 'IA1' THEN aNR3H = 522 ;
ELSE IF aR3H = 'BB0' THEN aNR3H = 610 ;
ELSE IF aR3H = 'BA2' THEN aNR3H = 621 ;
ELSE IF aR3H = 'BA1' THEN aNR3H = 622 ;
ELSE IF aR3H = 'PD0' THEN aNR3H = 710 ;
ELSE IF aR3H = 'PC0' THEN aNR3H = 720 ;
ELSE IF aR3H = 'PB0' THEN aNR3H = 730 ;
ELSE IF aR3H = 'PA2' THEN aNR3H = 741 ;
ELSE IF aR3H = 'PA1' THEN aNR3H = 742 ;
ELSE
 aNR3H = . ;

end;

** END OF RUG-III/HC SAS CODE **;

```