



Atherosclerosis Risk in Communities Study

Cohort Exam Visit 7 NCS

STATUS71 Derived Variable Dictionary (v.1.3)

October 2021

ARIC STATUS71 Derived Variable Dictionary

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NEW OR CHANGED FROM PREVIOUS DISTRIBUTION

This table describes the changes to the last published STATUS71_yymmdd dictionary. The STATUS71 dataset is now final, frozen (5/2021) As the dataset undergoes modifications, this table will describe the updates made to the previously distributed dataset.

Modification Date	Variable Name	Reason(s) for Change
10/13/2022	Incident self-reported disease variables	The algorithms documented for the incident self-report variables in the previous dictionary incorrectly referenced the AFU instead of MCU. Those variable algorithms have been corrected.
5/28/2021	Leveled dementia variables, associated date and source variables (DEMDXL*_7*) – see chapter 6 Incident self-reported disease dates (INCSEFLRPT*_DATE71) – see chapter 5	- The 2019 ARIC surveillance event data was finalized. The surveillance data is used in the leveled dementia data variables. - The dates for the incident self-report variables had an error in the definition specifications that affected those participants who did not come to Visit 7. Those date variables have been corrected. - Dataset is final and frozen
6/29/2020	Leveled dementia variables added to the dictionary since the interim distribution	Leveled dementia variables had not been calculated until June 2020.

1. OVERVIEW

The STATUS71 dataset has 15,792 records, one for each ARIC participant. The purpose of this dataset is to provide to ARIC collaborators widely used, verified derived variables for the entire cohort, not limited to the participants who came to the current visit (V7). The dataset naming conventions are as follows: The dataset name retains the dataset creation date (ex: STATUS71_200624) until the dataset is considered final, frozen. After a dataset is frozen, the creation date is dropped from the dataset name (ex: STATUS71). The first digit in the dataset name refers to the current visit number. The second digit in the dataset name is incremented when the current dataset undergoes significant changes. The variable naming convention is similar: Across-visit variables have identical names except for the second to last digit in the variable name, which represents the visit number (ex: GENDER61 at Visit 6 vs. GENDER71 at Visit 7). The last digit in the variable name identifies the definition version of a variable. STATUS variables are derived from the data collected from the previous and current visits, ARIC cohort surveillance and ARIC follow-up; their definitions are evaluated as of the last date of visit 7 data collection. STATUS71_yymmdd will be final, frozen after the surveillance datasets are complete for events in 2019.

2. ADMINISTRATIVE

2.1 SUBJECTID (ARIC Subject ID (CIR))

Type: Character; length: \$7.

2.2 ID (ARIC ID – same as Subject ID)

Type: Character; length: \$7.

2.3 CENTER (Field Center)

Description: Character variable with four possible values derived from the enrollment site:
F: Forsyth County, North Carolina
J: The city of Jackson, Mississippi
M: Selected northwestern suburbs of Minneapolis, Minnesota
W: Washington County, Maryland

Type: Character; length: \$1.

Algorithm: CENTER = First letter of the subject ID

Source variable(s): SUBJECTID

3. ARIC VISIT COMPLETION AND STUDY STATUS VARIABLES

3.1 DATEOFDEATH (Date of Death)

Description: Date variable indicating date of death compiled from previous visit dates and ARIC surveillance data.

Type: Date

Algorithm: If dtha09>NULL then dateofdeath=dtha09;
else if hraa14>NULL and hraa17="D" then dateofdeath=hraa14;
else if (celb04>NULL and celb06='Y') then dateofdeath=celb04;
else if NULL<[ADER]dthdate <"15NOV2019"d then
dateofdeath=dthdate;
else dateofdeath=NULL;

Source variable(s): dtha09 [SURVALL.DTHA1909a], hraa14 [SURVALL.HRAA1909a],
celb04[SURVALL.CELB1909a], celb06 [SURVALL.CELB1909a],
dthdate [ADER]

3.2 KNWNDEADBYVISIT21 (Participant is known to be dead at visit 2)

Description: Numeric indicator variable indicating that participant is known to be dead by the start of visit 2 (February 5, 1990): 0=No, 1=Yes.

Type: Numeric

Algorithm: if NULL<dateofdeath<='05Feb1990'd then knwndeadbyvisit21=1;
else knwndeadbyvisit21=0;

Source variable(s): dateofdeath

3.3 KNWNDEADBYVISIT31 (Participant is known to be dead at visit 3)

Description: Numeric indicator variable indicating that participant is known to be dead by the start of visit 3 (March 16, 1993): 0=No, 1=Yes.

Type: Numeric

Algorithm: if NULL<dateofdeath<='16Mar1993'd then knwndeadbyvisit31=1;
else knwndeadbyvisit31=0;

Source variable(s): dateofdeath

3.4 KNWNDEADBYVISIT41 (Participant is known to be dead at visit 4)

Description: Numeric indicator variable indicating that participant is known to be dead by the start of visit 4 (February 1, 1996): 0=No, 1=Yes.

Type: Numeric

Algorithm: if NULL<dateofdeath<='01Feb1996'd then knwndeadbyvisit41=1;
else knwndeadbyvisit41=0;

Source variable(s): dateofdeath

3.5 KNWNDEADBYVISIT51 (Participant is known to be dead at visit 5)

Description: Numeric indicator variable indicating that participant is known to be dead by the start of visit 5 (June 1, 2011): 0=No, 1=Yes.

Type: Numeric

Algorithm: if NULL<dateofdeath<='01Jun2011'd then knwndeadbyvisit51=1;
else knwndeadbyvisit51=0;

Source variable(s): dateofdeath

3.6 KNWNDEADBYVISIT61 (Participant is known to be dead at visit 6)

Description: Numeric indicator variable indicating that participant is known to be dead by the start of visit 6 (June 15, 2016): 0=No, 1=Yes.

Type: Numeric

Algorithm: if NULL<dateofdeath<='15Jun2016'd then knwndeadbyvisit61=1;
else knwndeadbyvisit61=0;

Source variable(s): dateofdeath

3.7 KNWNDEADBYVISIT71 (Participant is known to be dead at visit 7)

Description: Numeric indicator variable indicating that participant is known to be dead by the start of visit 6 (February 01, 2018): 0=No, 1=Yes.

Type: Numeric

Algorithm: if NULL<dateofdeath<='01FEB2018'd then knwndeadbyvisit71=1;
else knwndeadbyvisit71=0;

Source variable(s): dateofdeath

3.8 RESPOND21 (Participant completed visit 2)

Description: Categorical variable providing information on completion of visit 2:
0=Died prior to visit, 1=Completed visit, 2=Eligible for visit but died before completed, 3=Refused visit, lost, or did not get examined.

Type: Numeric

Algorithm: if knwndeadbyvisit21=1 then respond21=0;
else if v2date21>NULL then respond21=1;
else if '5Feb1990'd<=dateofdeath<='15Mar1993'd then respond21=2;
else respond21=3;

Source variable(s): dateofdeath, knwndeadbyvisit21, v2date21

3.9 RESPOND31 (Participant completed visit 3)

Description: Categorical variable providing information on completion of visit 3:
0=Died prior to visit, 1=Completed visit, 2=Eligible for visit but died before completed, 3=Refused visit, lost, or did not get examined.

Type: Numeric

Algorithm: if knwndeadbyvisit31=1 then respond31=0;
else if v3date31>NULL then respond31=1;
else if '16Mar1993'd<=dateofdeath<='31Jan1996'd then respond31=2;
else respond31=3;

Source variable(s): dateofdeath, knwndeadbyvisit31, v3date31

3.10 RESPOND41 (Participant completed visit 4)

Description: Categorical variable providing information on completion of visit 4:
0=Died prior to visit, 1=Completed visit, 2=Eligible for visit but died before completed, 3=Refused visit, lost, or did not get examined.

Type: Numeric

Algorithm: if knwndeadbyvisit41=1 then respond41=0;
else if v4date41>NULL then respond41=1;
else if '1Feb1996'd<=dateofdeath<='30Jan1999'd then respond41=2;
else respond41=3;

Source variable(s): dateofdeath, knwndeadbyvisit41, v4date41

3.11 RESPOND51 (Participant completed visit 5)

Description: Categorical variable providing information on completion of visit 5:
0=Died prior to visit, 1=Completed visit, 2=Eligible for visit but died before completed, 3=Refused visit, lost, or did not get examined.

Type: Numeric

Algorithm: if knwndeadbyvisit51=1 then respond51=0;
else if v5date51>NULL then respond51=1;
else if '01Jun2011'd<=dateofdeath<='01Sep2013'd then respond51=2;
else respond51=3;

Source variable(s): dateofdeath, knwndeadbyvisit51, v5date51

3.12 RESPOND61 (Participant completed visit 6)

Description: Categorical variable providing information on completion of visit 6:
0=Died prior to visit, 1=Completed visit, 2=Eligible for visit but died before completed, 3=Refused visit, lost, or did not get examined.

Type: Numeric

Algorithm: if knwndeadbyvisit61=1 then respond61=0;
else if v6date61>.z then respond61=1;
else if '15JUN2016'd<=dateofdeath<='31DEC2017'd then
respond61=2;
else respond61=3;

Source variable(s): dateofdeath, knwndeadbyvisit61, v6date61

3.13 RESPOND71 (Participant completed visit 7)

Description: Categorical variable providing information on completion of visit 7:
0=Died prior to visit, 1=Completed visit, 2=Eligible for visit but died before completed, 3=Refused visit, lost, or did not get examined.

Type: Numeric

Algorithm: if STAGE_1_COMPLETE=1 then respond71=1;
else if knwndeadbyvisit71=1 then respond71=0;
else if '01FEB2018'd<=dateofdeath<='15NOV2019'd then
respond71=2;

else respond71=3;

Source variable(s): dateofdeath, knwndeadbyvisit71, STAGE_1_COMPLETE

3.14 RESPOND22 (Participant completed visit 2 (yes or no))

Description: Indicator variable indicating completion of visit 2: 0=no, 1=yes.

Type: Numeric

Algorithm: if respond21=1 then respond22=1;
Else respond22=0;

Source variable(s): respond21

3.15 RESPOND32 (Participant completed visit 3 (yes or no))

Description: Indicator variable indicating completion of visit 3: 0=no, 1=yes.

Type: Numeric

Algorithm: if respond31=1 then respond32=1;
Else respond32=0;

Source variable(s): respond31

3.16 RESPOND42 (Participant completed visit 4 (yes or no))

Description: Indicator variable indicating completion of visit 4: 0=no, 1=yes.

Type: Numeric

Algorithm: if respond41=1 then respond42=1;
Else respond42=0;

Source variable(s): respond41

3.17 RESPOND52 (Participant completed visit 5 (yes or no))

Description: Indicator variable indicating completion of visit 5: 0=no, 1=yes.

Type: Numeric

Algorithm: if respond51=1 then respond52=1;

Else respond52=0;

Source variable(s): respond51

3.18 RESPOND62 (Participant completed visit 6 (yes or no))

Description: Indicator variable indicating completion of visit 6: 0=no, 1=yes.

Type: Numeric

Algorithm: if respond61=1 then respond62=1;
Else respond62=0;

Source variable(s): respond61

3.19 RESPOND72 (Participant completed visit 7 (yes or no))

Description: Indicator variable indicating completion of visit 7: 0=no, 1=yes.

Type: Numeric

Algorithm: if respond71=1 then respond72=1;
Else respond72=0;

Source variable(s): respond71

3.20 STATUSDATE21 (Either death date, date of visit 2 exam, OR 05Feb1990)

Description: Date variable with status as of visit 2. Date is either date of completion of visit 2, date of death if dead by the start of visit 2, or the date that visit 2 began (05Feb1990).

Type: Date

Algorithm: if V2DATE21>NULL then statusdate21= V2DATE21;
else if knowndeadbyvisit21=1 then statusdate21=dateofdeath;
else statusdate21='05Feb1990'd;

Source variable(s): V2DATE21, knowndeadbyvisit2, dateofdeath

3.21 STATUSDATE31 (Either death date, date of visit 3 exam, OR 16Mar1993)

Description: Date variable with status as of visit 3. Date is either date of completion of visit 3, date of death if dead by the start of visit 3, or the date that visit 3 began (16Mar1993).

Type: Date

Algorithm: if V3DATE31>NULL then statusdate31= V3DATE31;
else if knowndeadbyvisit31=1 then statusdate31=dateofdeath;
else statusdate31='16Mar1993'd;

Source variable(s): V3DATE31, knowndeadbyvisit3, dateofdeath

3.22 STATUSDATE41 (Either death date, date of visit 4 exam, OR 01Feb1996)

Description: Date variable with status as of visit 4. Date is either date of completion of visit 4, date of death if dead by the start of visit 4, or the date that visit 4 began (01Feb1996).

Type: Date

Algorithm: if V4DATE41>NULL then statusdate41= V4DATE41;
else if knowndeadbyvisit41=1 then statusdate41=dateofdeath;
else statusdate41='01Feb1996'd;

Source variable(s): V4DATE41, knowndeadbyvisit4, dateofdeath

3.23 STATUSDATE51 (Either death date, date of visit 5 exam, OR 01Jun2011)

Description: Date variable with status as of visit 5. Date is either date of completion of visit 5, date of death if dead by the start of visit 5, or the date that visit 5 began (01Jun2011).

Type: Date

Algorithm: if V5DATE51>NULL then statusdate51= V5DATE51;
else if knowndeadbyvisit51=1 then statusdate51=dateofdeath;
else statusdate51='01Jun2011'd;

Source variable(s): V5DATE51, knowndeadbyvisit5, dateofdeath

3.24 STATUSDATE61 (Either death date, date of visit 6 exam, OR 15Jun2016)

Description: Date variable with status as of visit 6. Date is either date of completion of visit 6, date of death if dead by the start of visit 6, or the date that visit 6 began (15Jun2016).

Type: Date

Algorithm: if V6DATE61>NULL then statusdate61= V6DATE61;
else if knwndeadbyvisit61=1 then statusdate61=dateofdeath;
else statusdate61='15Jun2016'd;

Source variable(s): V6DATE61, knowndeaddbyvisit61, dateofdeath

3.25 STATUSDATE71 (Either death date, date of visit 7 exam, OR 01Feb2018)

Description: Date variable with status as of visit 7. Date is either date of completion of visit 7, date of death if dead by the start of visit 7, or the date that visit 7 began (01Feb2018).

Type: Date

Algorithm: if V7DATE71>NULL then statusdate71= V7DATE71;
else if knwndeadbyvisit71=1 then statusdate71=dateofdeath;
else statusdate71='01FEB2018'd;

Source variable(s): V7DATE71, knowndeaddbyvisit71, dateofdeath

3.26 STATUSHFDATE71 (Either date of visit 7 exam OR 01Feb2018)

Description: Date variable with status as of visit 7. Date is either date of completion of visit 7 or the date that visit 7 began (01Feb2018).

Type: Date

Algorithm: if V7DATE71>NULL then STATUSHFDATE71= V7DATE71;
else STATUSHFDATE71='01FEB2018'd;

Source variable(s): V7DATE71

3.27 LASTFUINTERVIEWDATE (Date of last completed follow-up interview by 15NOV2019)

Description: Date variable of last follow-up interview as of visit 7.

Type: Date

Algorithm: the max value of AFUcomp1_A among the records for a single ID where AFUcomp2_A indicates that the interview was accomplished (AFUcomp2_a in ('A','C','D')) AND where .z<afucomp1_A<="15NOV2019"d

Source variable(s): AFUcomp1_A, AFUcomp2_A

4. PHYSICAL VARIABLES AND INDICATORS

4.1 AGENATMENOPAUSEF (Age (years) at natural menopause)

Description: Numeric variable indicating age in years at natural menopause.

Type: Numeric

Algorithm: AGENATMENOPAUSEF = AGENATMENOPAUSEF [STATUS51]

Source variable(s): AGENATMENOPAUSEF (from STATUS51)

4.2 AGESRGMENOPAUSEF (Age (years) at surgical menopause)

Description: Numeric variable indicating age in years at surgical menopause.

Type: Numeric

Algorithm: AGESRGMENOPAUSEF = AGESRGMENOPAUSEF [STATUS51]

Source variable(s): AGESRGMENOPAUSEF (from STATUS51)

5. DISEASE INCIDENCE

Temporary SRHFail

Algorithm: =1 if MCU6 = 'Y' or MCU7 = 'Y'
=0 if (MCU6 = 'N' and MCU7 is NULL) or (MCU6 is NULL and MCU7 = 'N')
=NULL if MCU6 and MCU7 are both NULL

5.1 INCSELFREPHPBP71 (Self-Report Incident High Blood Pressure by the end of Visit 7)

Description: Numeric indicator variable reporting if the participant self-reported high blood pressure by November 15, 2019. May be used in conjunction with INCSELFREPHPBP_DATE71.

Format: 1=Yes, 0=No, .=Missing

Type: Numeric

Algorithm: If MCU1=NULL then INCSELFREPHPBP71=NULL
Else if NULL <= MCU1a<="15NOV2019"d then do;
 If MCU1 = 'Y' then INCSELFREPHPBP71=1
 Else if MCU1 = 'N' then INCSELFREPHPBP71=0
End;
Else if MCU1a>"15NOV2019"d then INCSELFREPHPBP71=0;

Source variable(s): MCU1, MCU1a

5.2 INCSELFREPHPBP_DATE71 (Self-Report Incident High Blood Pressure Date or Earliest Date from Last Follow-up, Death, or End of V7 Data Collection)

Description: Date variable with the date the first time a participant self-reported high blood pressure (through November 15, 2019); if participant never self-reported high blood pressure (INCSELFREPHPBP71=0), then the date is either the date of the Medical Conditions Update (MCU) form, date of death, or November 15, 2019, whichever is earlier. The variable is missing if there are no records for this ID.

Algorithm: If INCSELFREPHPBP71=1 then INCSELFREPHPBP_DATE71 = MCU1a
Else if INCSELFREPHPBP71=0 then
INCSELFREPHPBP_DATE71=min(MCU0a, DATEOFDEATH, "15NOV2019"d)
Else INCSELFREPHPBP_DATE71 is NULL

Type: Date

Source variable(s): MCU0a, MCU1a, INCSELFREP71, DATEOFDEATH

5.3 INCSELFREPDM71 (Self-Report Diabetes Mellitus by the End of Visit 7)

Description: Numeric indicator variable reporting if the participant self-reported diabetes mellitus by November 15, 2019. May be used in conjunction with INCSELFREPDM_DATE71.

Format: 1=Yes, 0=No, .=Missing

Algorithm: If MCU2=NULL then INCSELFREPDM71=NULL
Else if NULL <= MCU2a<="15NOV2019"d then do;
 If MCU2 = 'Y' then INCSELFREPDM71=1
 Else if MCU2 = 'N' then INCSELFREPDM71=0
End;
Else if MCU2a>"15NOV2019"d then INCSELFREPDM71=0;

Type: Numeric

Source variable(s): MCU2, MCU2a

5.4 INCSELFREPDM_DATE71 (Self-Report Diabetes Mellitus Date or Earliest Date from Last Follow-up, Death, or End of V7 Data Collection)

Description: Date variable with the date the first time a participant self-reported diabetes mellitus (through November 15, 2019); if participant never self-reported diabetes mellitus (INCSELFREPDM71=0), then the date is either the date of the Medical Conditions Update (MCU) form, date of death, or November 15, 2019, whichever is earlier. The variable is missing if there are no records for this ID.

Type: Date

Algorithm: If INCSELFREPDM71=1 then INCSELFREPDM_DATE71 = MCU2a
Else if INCSELFREPDM71=0 then
 INCSELFREPDM_DATE71=min(MCU0a, DATEOFDEATH,
 "15NOV2019"d)
Else INCSELFREPDM_DATE71 is NULL

Source variable(s): MCU0a, MCU2a, INCSELFREPDM71, DATEOFDEATH

5.5 INCSELFREPCLD71 (Self-Report Incident PVD or Claudication by End of Visit 7)

Description: Numeric variable reporting if the participant self-reported incident PVD or claudication by November 15, 2019. May be used in conjunction with INCSELFREPCLD_DATE71.

Format: 1=Yes, 0=No, .=Missing

Type: Numeric

Algorithm: If MCU5=NULL then INCSELFREPCLD71=NULL
Else if NULL <= MCU5a<="15NOV2019"d then do;
 If MCU5 = 'Y' then INCSELFREPCLD71=1
 Else if MCU5 = 'N' then INCSELFREPCLD71=0
End;
Else if MCU5a>"15NOV2019"d then INCSELFREPCLD71=0;

Source variable(s): MCU5, MCU5a

5.6 INCSELFREPCLD_DATE71 (Self-Report Incident PVD or Claudication Date or Earliest Date from Last Follow-up, Death, or End of V7 Data Collection)

Description: Date variable with the date the first time a participant self-reported incident PVD or claudication (through November 15, 2019); if participant never self-reported incident PVD or claudication (INCSELFREPCLD71=0), then the date is either the date of the Medical Conditions Update (MCU) form, date of death, or November 15, 2019, whichever is earlier. The variable is missing if there are no records for this ID.

Algorithm: If INCSELFREPCLD71=1 then INCSELFREPCLD_DATE71 = MCU5a
Else if INCSELFREPCLD71=0 then
INCSELFREPCLD_DATE71=min(MCU0a, DATEOFDEATH, "15NOV2019"d)
Else INCSELFREPCLD_DATE71 is NULL

Type: Date

Source variable(s): MCU0a, MCU5a, INCSELFREPCLD71, DATEOFDEATH

5.7 INCSELFREPAST71 (Self-Report Asthma by the End of Visit 7)

Description: Numeric variable reporting if the participant self-reported asthma by November 15, 2019. May be used in conjunction with INCSELFREPAST_DATE71.

Format: 1=Yes, 0=No, .=Missing

Type: Numeric

Algorithm: If MCU4=NULL then INCSELFREPAST71=NULL
 Else if NULL <= MCU4a<="15NOV2019"d then do;
 If MCU4 = 'Y' then INCSELFREPAST71=1
 Else if MCU4 = 'N' then INCSELFREPAST71=0
 End;
 Else if MCU4a>"15NOV2019"d then INCSELFREPAST71=0;

Source variable(s): MCU4, MCU4a

5.8 INCSELFREPAST_DATE71 (Self-Report Asthma Date or Earliest Date from Last Follow-up, Death, or End of V7 Data Collection)

Description: Date variable with the date the first time a participant self-reported asthma (through November 15, 2019); if participant never self-reported asthma (INCSELFREPAST71=0), then the date is either the date of the Medical Conditions Update (MCU) form, date of death, or November 15, 2019, whichever is earlier. The variable is missing if there are no records for this ID.

Type: Date

Algorithm: If INCSELFREPAST71=1 then INCSELFREPAST_DATE71 = MCU4a
 Else if INCSELFREPAST71=0 then
 INCSELFREPAST_DATE71=min(MCU0a, DATEOFDEATH, "15NOV2019"d)
 Else INCSELFREPAST_DATE71 is NULL

Source variable(s): MCU0a, MCU4a, INCSELFREPAST71, DATEOFDEATH

5.9 INCSELFREPLUNG71 (Self-Report Chronic Lung Disease by the End of Visit 7)

Description: Numeric variable reporting if the participant self-reported chronic lung disease by November 15, 2019. May be used in conjunction with INCSELFREPLUNG_DATE71.

Format: 1=Yes, 0=No, .=Missing

Type: Numeric

Algorithm: If MCU3=NULL then INCSELFREPLUNG71=NULL
 Else if NULL <= MCU3a<="15NOV2019"d then do;
 If MCU3 = 'Y' then INCSELFREPLUNG71=1

```

Else if MCU3 = 'N' then INCSELFREPLUNG71=0
End;
Else if MCU3a>"15NOV2019"d then INCSELFREPLUNG71=0;

```

Source variable(s): MCU3, MCU3a

5.10 INCSELFREPLUNG_DATE71 (Self-Report Chronic Lung Disease Date or Earliest Date from Last Follow-up, Death, or End of V7 Data Collection)

Description: Date variable with the date the first time a participant self-reported chronic lung disease (through November 15, 2019); if participant never self-reported chronic lung disease (INCSELFREPLUNG71=0), then the date is either the date of the Medical Conditions Update (MCU) form, date of death, or November 15, 2019, whichever is earlier. The variable is missing if there are no records for this ID.

Type: Date

Algorithm: If INCSELFREPLUNG71=1 then INCSELFREPLUNG_DATE71 = MCU3a
Else if INCSELFREPLUNG71=0 then
INCSELFREPLUNG_DATE71=min(MCU0a, DATEOFDEATH, "15NOV2019"d)
Else INCSELFREPLUNG_DATE71 is NULL

Source variable(s): MCU0a, MCU3a, INCSELFREPLUNG71, DATEOFDEATH

5.11 INCSELFREPHF71 (Self-Report Heart Failure by the End of Visit 7)

Description: Numeric variable reporting if the participant self-reported heart failure by November 15, 2019. May be used in conjunction with INCSELFREPHF_DATE71.

Format: 1=Yes, 0=No, .=Missing

Type: Numeric

Algorithm: If SRHFail=NULL then INCSELFREPHF71=NULL
Else if NULL <= MCU7a<="15NOV2019"d then do;
If SRHFail = 1 then INCSELFREPHF71=1
Else if SRHFail = 0 then INCSELFREPHF71=0
End;
Else if MCU7a>"15NOV2019"d then INCSELFREPHF71=0;

Source variable(s): SRHFail, MCU7a

5.12 INCSELFREPHF_DATE71 (Self-Report Heart Failure Date or Earliest Date from Last Follow-up, Death, or End of V7 Data Collection)

Description: Date variable with the date the first time a participant self-reported heart failure (through November 15, 2019); if participant never self-reported heart failure (INCSELFREPHF71=0), then the date is either the date of the Medical Conditions Update (MCU) form, date of death, or November 15, 2019, whichever is earlier. The variable is missing if there are no records for this ID.

Type: Date

Algorithm: If INCSELFREPHF71=1 then INCSELFREPHF_DATE71 = MCU7a
Else if INCSELFREPHF71=0 then
INCSELFREPHF_DATE71=min(MCU0a, DATEOFDEATH,
"15NOV2019"d)
Else INCSELFREPHF_DATE71 is NULL

Source variable(s): MCU0a, MCU7a, INCSELFREPHF71, DATEOFDEATH

5.13 INCSELFREPAF71 (Self-Report Atrial Fibrillation by the End of Visit 7)

Description: Numeric variable reporting if the participant self-reported atrial fibrillation by November 15, 2019. May be used in conjunction with INCSELFREPAF_DATE71.

Format: 1=Yes, 0=No, .=Missing

Type: Numeric

Algorithm: If MCU12=NULL then INCSELFREPAF71=NULL
Else if NULL <= MCU12a<="15NOV2019"d then do;
 If MCU12 = 'Y' then INCSELFREPAF71=1
 Else if MCU12 = 'N' then INCSELFREPAF71=0
End;
Else if MCU12a>"15NOV2019"d then INCSELFREPAF71=0;

Source variable(s): MCU12, MCU12a

5.14 INCSELFREPAF_DATE71 (Self-Report Atrial Fibrillation Date or Earliest Date from Last Follow-up, Death, or End of V7 Data Collection)

Description: Date variable with the date the first time a participant self-reported atrial fibrillation (through November 15, 2019); if participant never self-reported atrial fibrillation (INCSELFREPAF71=0), then the date is either the date of the Medical Conditions Update (MCU) form, date of death, or November 15, 2019, whichever is earlier. The variable is missing if there are no records for this ID.

Type: Date

Algorithm: If INCSELFREPAF71=1 then INCSELFREPAF_DATE71 = MCU12a
Else if INCSELFREPAF71=0 then
INCSELFREPAF_DATE71=min(MCU0a, DATEOFDEATH,
"15NOV2019"d)
Else INCSELFREPAF_DATE71 is NULL

Source variable(s): MCU0a, MCU12a, INCSELFREPAF71, DATEOFDEATH

5.15 INCSELFREPSTK71 (Self-Report Stroke by the End of Visit 7)

Description: Numeric variable reporting if the participant self-reported stroke by November 15, 2019. May be used in conjunction with INCSELFREPSTK_DATE71.

Format: 1=Yes, 0=No, .T=Missing

Algorithm: INCSELFREPSTK71=1 if any of the records for a single ID have a Y value for either AFUcomp29_A or AFUcomp8b_K and
NULL<afucomp1_A<="15NOV2019"d
INCSELFREPSTK71=0 if AFUcomp29_A, AFUcomp8b_K are
(N,NULL) or (NULL,N) respectively in all records for a single ID, where
NULL<afucomp1_A<="15NOV2019"d
INCSELFREPSTK71=NULL otherwise.

Type: Numeric

Source variable(s): AFUcomp29_A, AFUcomp8b_K, AFUcomp1_a

5.16 INCSELFREPSTK_DATE71 (Self-Report Stroke Date or Earliest Date from Last Follow-up, Death, or End of V7 Data Collection)

Description: Date variable with the date the first time a participant self-reported stroke (through November 15, 2019); if participant never self-reported stroke (INCSELFREPSTK71=0), then the date is either the most recent AFU, date of death, or November 15, 2019, whichever is earlier. The variable is missing if there are no records for this ID.

Algorithm: INCSELFREPSTK_DATE71= earliest value of AFUcomp1_A within the records for a single ID where a Y value is found for either AFUcomp29_A or AFUcomp8b_K (as long as AFUcomp1_A is not greater than "15NOV2019"d)
else use min(LASTFUINTERVIEWDATE, DATEOFDEATH, "15NOV2019"d)
else missing if no records are found for a single ID

Type: Date

Source variable(s): AFUcomp29_A, AFUcomp8b_K, AFUcomp1_a, LASTFUINTERVIEWDATE, DATEOFDEATH

6. LEVELED DEMENTIA DIAGNOSES

The Neurocognitive Committee created five hierarchical, leveled dementia diagnosis variables for much of the cohort using:

1. Level 1 - neuropsychological data collected at V5, V6, and/or V7
2. Level 2a -TICS, retrospective dementia surveillance from V5
3. Levels 2b, 2c - SIS (ARIC follow-up Six Item Screener) or AD8 (ARIC follow-up AD8 Dementia Screening Interview)
4. Level 3 - ARIC surveillance data collection on hospitalizations and deaths

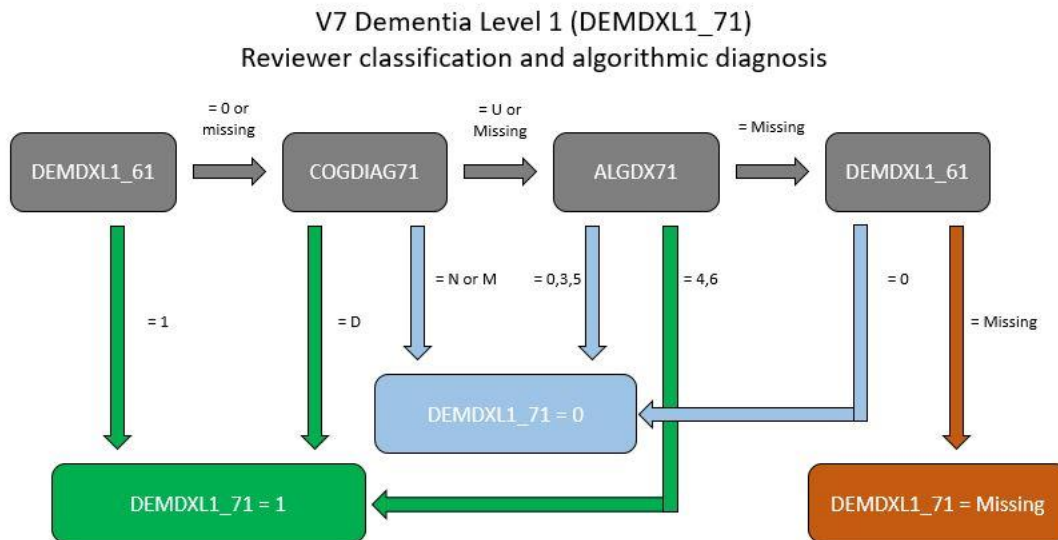
Each of the leveled diagnosis variables has an associated date of diagnosis and a source variable that describes the data source for the diagnosis and the diagnosis date. If the PPT has a dementia diagnosis, the date corresponds to the earliest date that dementia was detected. If the PPT has no dementia diagnosis, the corresponding date comes from the V5 NCS date, V6 NCS date, V7 NCS date, AD8 date, or SIS date. The latest date assigned to any of the dementia variables is November 15, 2019, the last day of ARIC V7 data collection.

The sequential order from available data sources considered for dementia ascertainment assignment are 1) reviewer diagnosis at V5, V6, or V7 2) algorithmic diagnosis at V5, V6, or V7 3) AD8 result, 4) two SIS results, 5) one SIS result if PPT is lost to follow up or deceased, 6) hospitalization discharge codes, and 7) death certificate codes.

The algorithms for determining the values for the leveled dementia variables are complicated and contain some temporary variable references. Find the temporary variables' definitions in Appendix A. Each variable has a graphical depiction of the definition in addition to a written one.

Level 1

The level 1 variable for dementia diagnosis (**DEMDXL1_71**) is complete for those PPTs who attended V5, V6 or V7 and completed the neuropsychological assessments. The evaluation procedure for determining cognitive status at the visits is detailed in **Manual 17**. Briefly, cognitive, behavioral, and functional assessments were completed for all participants at V5, V6, V7. A subset of the PPTs who completed the visit were invited for additional data collection (stage 2). An algorithmic profile was employed to assign cognitive status, and where the algorithmic profiles were concordant or discordant for MCI or dementia (see **Manual 17** for the profile definitions), reviewers evaluated all diagnostic materials and rendered a syndromic diagnosis. Dementia cases identified at V5 (DEMDXL1_51=1) are carried forward to the assignment of level 1 dementia at V6 and V7. At V7, the reviewer diagnosis superseded the algorithmic diagnosis when both are present. The non-dementia V5 assignment (DEMDXL1_51=0) persists in the absence of V6 data and V7 data.



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6.1 DEMDXL1_71 (Dementia diagnosis level 1)

Description:

Indicator variable for dementia based on both reviewer diagnosis and algorithmic syndromic diagnosis from both Visit 6 to Visit 7; reviewer diagnosis is given higher priority over the algorithmic diagnosis.

- **DEMDXL1_71=1:** dementia was assigned at level 1 at V6 (DEMDXL1_61=1)
- At V7, DEMDXL1_71 is assigned based on reviewer classification (COGDIAG71) or algorithmic diagnosis (ALGDX71). Reviewer classification takes precedence over algorithm when available. Thus the following are defined hierarchically:
 - **DEMDXL1_71=1:** reviewer classification assigned a diagnosis of dementia (COGDIAG71=D)

- **DEMDXL1_71=0**: reviewer classification assigned a diagnosis of normal or MCI (COGDIAG71=N or M)
- **DEMDXL1_71=1**: reviewer classification assigned a diagnosis of unknown or diagnosis is missing (COGDIAG71=U or missing) AND algorithm assigned a diagnosis of dementia or probable dementia (ALGDX71 = 4, 6)
- **DEMDXL1_71=0**: reviewer classification assigned a diagnosis of unknown or diagnosis is missing (COGDIAG71=U or missing) AND algorithm assigned a diagnosis of normal, MCI or probable MCI (ALGDX71 = 0, 3, 5)
- **DEMDXL1_71=0**: non-dementia was assigned at level 1 at V6 (DEMDXL1_61=0). This carries forward a non-dementia assigned at V6 level 1 in the absence of V7 information at this level
- **DEMDXL1_71=NULL**: none of the above criteria are met

Format: 0=No, 1=Yes.

Type: Numeric

Algorithm: If DEMDXL1_61=1 then DEMDXL1_71=1
 Else if COGDIAG71= "D" then DEMDXL1_71=1
 Else if COGDIAG71= ("M" or "N") then DEMDXL1_71=0
 Else if COGDIAG71= ("U" or "") and ALGDX71 in (4,6) then
 DEMDXL1_71=1
 Else if COGDIAG71= ("U" or "") and ALGDX71 in (0,3,5) then
 DEMDXL1_71=0
 Else if COGDIAG71= ("U" or "") and ALGDX71=NULL and
 DEMDXL1_61=0 then DEMDXL1_71=0
 Else DEMDXL1_71=NULL

Source variable(s): DEMDXL1_61 (from STATUS61) COGDIAG71, ALGDX71

6.2 DATE_DEMDXL1_71 (Date for dementia diagnosis level 1)

Description: Date of diagnosis when the value of DEMDXL1_71=1 or the last date of assessment when DEMDXL1_71=0. When DEMDXL1_71=NULL then the date will also be missing. For those PPTs with a dementia diagnosis, the diagnosis date assigned will either be the date of the earliest hospitalization date with a dementia code, the V5 NCS exam date if the diagnosis occurred at V5, the V6 NCS exam date if the diagnosis occurred at V6, or the V7 exam date if the diagnosis occurred at V7.

Type: Date

Algorithm:

For those PPTs with non-missing DEMDXL1_71:

If DEMDXL1_61=1 then DATE_DEMDXL1_71=DATE_DEMDXL1_61;

Else if COGDIAG71 = 'D' then do;

if DEMDXL2a_62 = 1 then DATE_DEMDXL_71 =
DATE_DEMDXL2a_62;

Else if DEMDXL2c_62 = 0 then do;

if (dementedcel71=1 and ((dementedcel71_date_cond
<= date_demdxl2c_62) or (missing(date_demdxl2c_62)
and dementedcel71_date_cond < '01SEP13'd))) or
dementedcel71=. then DATE_DEMDXL1_71 =
V7DATE71;

else if dementedcel71=1 and (.z<
date_demdxl2c_62<dementedcel71_date_cond or
(missing(date_demdxl2c_62) and
dementedcel71_date_cond >= '01SEP13'd)) then
DATE_DEMDXL1_71=min(v7date71,
dementedcel71_date_cond);

End;

Else DATE_DEMDXL1_71 = min(v7date71,
dementedcel71_date1);

End;

Else if COGDIAG71 in ('N', 'M') then DATE_DEMDXL1_71 =
V7DATE71;

Else if COGDIAG71 in ('U', '') then do;
if algdx71 in (4,6) then do;

if demdxl2c_62=1 then
date_demdxl1_71=date_demdxl2c_62;

else if demdxl2c_62=0 then do;
if (dementedcel71=1 and
((dementedcel71_date_cond <=
date_demdxl2a_62) or
(missing(date_demdxl2c_62) and
dementedcel71_date_cond < '01SEP13'd))) or
dementedcel71=. then
date_demdxl1_71=v7date71;

else if dementedcel71=1 and (.z<
date_demdxl2a_62<dementedcel71_date_cond
or (missing(date_demdxl2a_62) and

```

dementedcel71_date_cond >= '01SEP13'd)) then
date_demdxl1_71=min(v7date71,dementedcel71
_date_cond);
end;

```

```

else date_demdxl1_71 =
min(v7date71,dementedcel71_date1);
End;

```

```

Else if algd71 in (0,3,5) then
DATE_DEMDXL1_71=V7DATE71;
END;

```

```

Else if ALGD71 is NULL and DEMDXL1_61 = 0 then
DATE_DEMDXL1_71 = DATE_DEMDXL1_61;

```

For those PPTs missing DEMDXL1_71:
DATE_DEMDXL1_71=missing

Source variable(s): DEMDXL1_61, DATE_DEMDXL1_61, DEMDXL2a_62,
DATE_DEMDXL2a_62, DEMDXL2c_62, DATE_DEMDXL2c_62 (from
STATUS61), COGDIAG71, ALGD71, V7DATE71 (from DERIVE71),
DEMENTEDCEL71, DEMENTEDCEL71_DATE_COND,
DEMENTEDCEL71_DATE1

6.3 SOURCE_DEMDXL1_71 (Diagnosis and date source for DATE_DEMDXL1_71)

Description: Source variable created to indicate the diagnosis and date source for
DATE_DEMDXL1_71

Type: Character

Algorithm: If DEMDXL1_71 = missing then SOURCE_DEMDXL1_71 should be
set to missing

```

ELSE IF the diagnosis occurred at V6 (DEMDXL1_61=1)
SOURCE_DEMDXL1_71 = SOURCE_DEMDXL1_61

```

```

ELSE IF the diagnosis occurred at V7
SOURCE_DEMDXL1_71 = "V7" if DATE_DEMDXL1_71 took on Visit
7 date (V7DATE71)
OR = "V7+HOSP" if DATE_DEMDXL1_71 took on
DEMENTEDCEL71_DATE_COND or DEMENTEDCEL71_DATE1
OR = "V7+"||strip(source_demdxl2a_62) if DATE_DEMDXL1_71 =
DATE_DEMDXL2a_62
OR = "V7+"||strip(source_demdxl2c_62) if DATE_DEMDXL1_71 =
DATE_DEMDXL2c_62

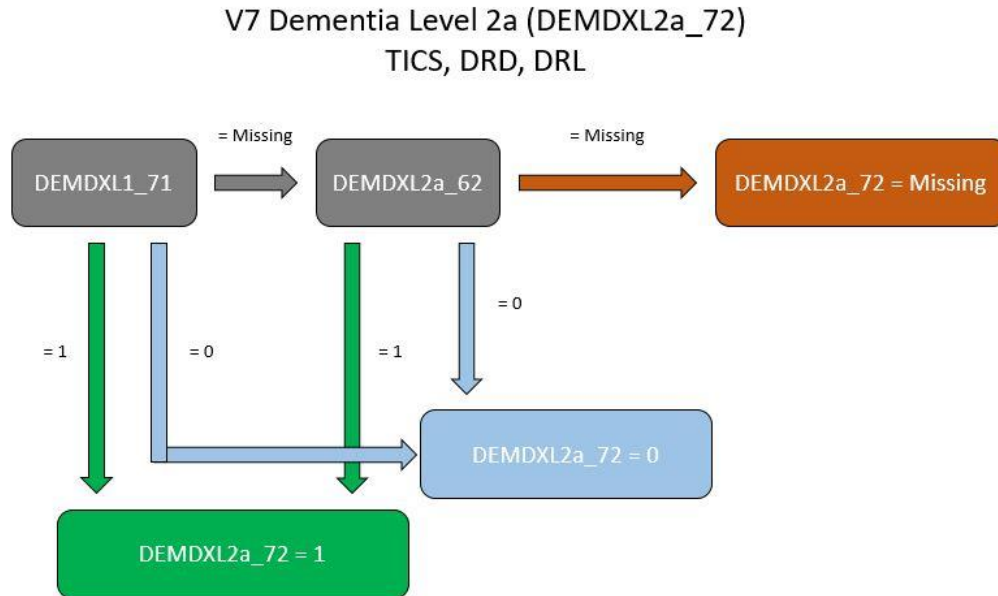
```

ELSE IF ALGDX71 is NULL and DEMDXL1_61 = 0 then
SOURCE_DEMDXL1_71 = SOURCE_DEMDXL1_61

Source variable(s): DEMDXL1_71, DATE_DEMDXL1_71, DEMDXL1_61,
SOURCE_DEMDXL1_61, ALGDX71

Level 2a

For those PPTs who were alive at the time of V7 but declined the visit, dementia was determined using the education-adjusted TICS score or informant ratings for the CDR and FAQ. The level 2a dementia diagnosis variable, **DEMDXL2a_72**, is equal to **DEMDXL2_51** when **DEMDXL1_71** is missing. Refer to STATUS51 Derived Variable Dictionary for information on DEMDXL2_51.



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6.4 DEMDXL2a_72 (Dementia diagnosis level 2a)

Description:

Indicator variable for dementia based on reviewer diagnosis, algorithmic syndromic diagnosis, TICS (telephone interview for cognitive status) and proxy interview. Diagnoses are prioritized, with the reviewer diagnosis being given highest priority, then the algorithmic syndromic diagnosis, TICS and finally the proxy interview.

- **DEMDXL2a_72=1:** dementia was assigned at V7 level 1 (DEMDXL1_71=1)
- **DEMDXL2a_72=0:** non-dementia was assigned at V7 level 1 by V7 reviewer classification or V7 algorithmic diagnosis (DEMDXL1_71=0 AND COGDIAG71=N or M; OR ALGDX71 = 0, 3, 5). This allows us to replace any non-dementias assigned from V6, but not replace the non-dementias assigned by V7 reviewer classification or algorithmic diagnosis.
- **DEMDXL2a_72=1:** dementia was assigned at level 2a at V6 (DEMDXL2a_62=1)

- **DEMDXL2a_72=0**: non-dementia was assigned at level 1 at V6 (DEMDXL1_61=0, or equivalently DEMDXL1_51=0). This carries forward those non-dementias assigned at V6 level 1.
- **DEMDXL2a_72=0**: non-dementia was assigned at level 2a at V6 (DEMDXL2a_62=0). This carries forward any non-dementias assigned at V6 level 2a in the absence of the above information.
- **DEMDXL2a_72=NULL**: none of the above criteria are met

Format: 0=No, 1=Yes.

Type: Numeric

Algorithm: For PPTs with DEMDXL1_71 in (0,1):
DEMDXL2a_72=DEMDXL1_71

For PPTs missing DEMDXL1_71:

If DEMDXL2a_62 in (0,1) then DEMDXL2a_72 = DEMDXL2a_62;
Else if DEMDXL2a_62 = NULL then DEMDXL2a_72 = NULL

Source variable(s): DEMDXL2a_62 (from STATUS61), DEMDXL1_71

6.5 DATE_DEMDXL2a_72 (Date for dementia diagnosis level 2a)

Description: Date of diagnosis when the value of DEMDXL2a_72=1 or the last date of assessment when DEMDXL2a_72=0. When DEMDXL2a_71=NULL then the date will also be missing. For those PPTs with a dementia diagnosis, the diagnosis date assigned will either be the date of the earliest hospitalization date with a dementia code, the V5 NCS exam date if the diagnosis occurred at V5, the V7 exam date if the diagnosis occurred at V7, or the TICS/ proxy interview date.

Type: Date

Algorithm: For PPTs with DEMDXL1_71=1 or (DEMDXL1_71=0 and SOURCE_DEMDXL1_71 = "V7" or "V7+DOD"):
DATE_DEMDXL2a_72=DATE_DEMDXL1_71

For PPTs missing DEMDXL1_71 or (DEMDXL1_71=0 and SOURCE_DEMDXL1_71 in ("V5", "V6")):
DATE_DEMDXL2a_72=DATE_DEMDXL2a_62 when DEMDXL2a_62 is 0 or 1

For deceased PPTs, if DATE_DEMXL2a_72>DATEOFDEATH and SOURCE_DEMDXL1_71 is not "V7":
DATE_DEMXL2a_72=DATEOFDEATH

Source variable(s): DEMDXL1_71, SOURCE_DEMDXL1_71, DATE_DEMDXL1_71, DEMDXL2a_62, DATE_DEMDXL2a_62, DATEOFDEATH

6.6 SOURCE_DEMDXL2a_72 (Diagnosis and date source for DATE_DEMDXL2a_72)

Description: Source variable created to indicate the diagnosis and date source for DATE_DEMDXL2a_71

Type: Character

Algorithm: For PPTs with DEMDXL1_71=1 or (DEMDXL1_71=0 and SOURCE_DEMDXL1_71 = "V7" or "V7+DOD"):
SOURCE_DEMDXL2a_72=SOURCE_DEMDXL1_71

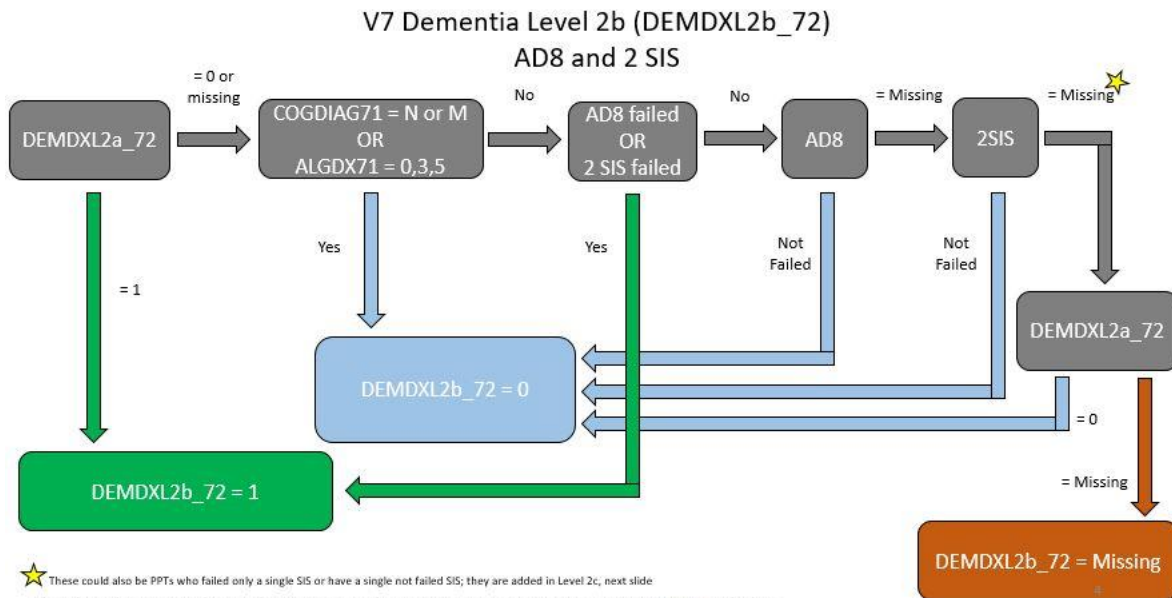
For PPTs missing DEMDXL1_71 or (DEMDXL1_71=0 and SOURCE_DEMDXL1_71 in ("V5", "V6")):
SOURCE_DEMDXL2a_72=SOURCE_DEMDXL2a_62
when DEMDXL2a_62 is 0 or 1

For deceased PPTs, if DATE_DEMDXL2a_72>DATEOFDEATH and SOURCE_DEMDXL1_71 is not "V7":
SOURCE_DEMDXL2a_72=strip(source_demdxl2a_72)||"+DOD"

Source variable(s): DEMDXL1_71, SOURCE_DEMDXL1_71, DEMDXL2a_62, DEMDXL2a_62, SOURCE_DEMDXL2a_62 (from STATUS61)

Level 2b

For those PPTs who were alive at the time of V7 but who declined to be seen in person, dementia was determined using the AD8 score (AD8 Dementia Screening Interview) or two prorated SIS scores (Six Item Screener). The level 2b dementia diagnosis variable, **DEMDXL2b_72**, is equal to **DEMDXL2a_72** when the level 2a variable is non-missing (except in some cases where the source of **DEMDXL2a_72** is V5 and DEMDXL1_51=0). If level 2a was not present, the AD8 score was considered. When AD8 was not available, the value assigned was based on two available prorated SIS scores.



6.7 DEMDXL2b_72 (Dementia diagnosis level 2b)

Description:

Indicator variable for dementia based on reviewer diagnosis, algorithmic syndromic diagnosis, failed AD8 (AD8 Dementia Screening Interview), and two failed SIS (Six Item Screener). Diagnoses are prioritized, with the reviewer diagnosis being given highest priority, then the algorithmic syndromic diagnosis, TICS/proxy, AD8, and finally the SIS.

- **DEMDXL2b_72=1**: dementia was assigned at V7 level 2a (DEMDXL2a_72=1)
- **DEMDXL2b_72=0**: non-dementia was assigned at V7 level 2a by V7 reviewer classification or V7 algorithmic diagnosis (DEMDXL2a_72=0 or missing AND COGDIAG71=N or M; OR ALGDX71 = 0, 3, 5). This allows us to replace any non-dementias assigned from V6 level 1 or V6 level 2, but not replace the non-dementias assigned by V7 reviewer classification or algorithmic diagnosis.
- **DEMDXL2b_72=1**: participant failed any AD8
- **DEMDXL2b_72=1**: participant failed any two SISs

- **DEMDXL2b_72=0**: participant has any not failed AD8
- **DEMDXL2b_72=0**: participant has any two not failed SIS, and did not receive the AD8
- **DEMDXL2b_72=0**: non-dementia was assigned at V7 level 2a (DEMDXL2a_72=0). This carries forward those non-dementias assigned at V6 level 1 OR non-dementias assigned at V6 level 2a in the absence of the above information.
- **DEMDXL2b_72=NULL**: none of the above criteria are met

Format: 0=No, 1=Yes.

Type: Numeric

Algorithm: For PPTs with DEMDXL2a_72=1 or (DEMDXL2a_72=0 and SOURCE_DEMDXL2a_71 = "V7" or "V7+DOD"):
DEMDXL2b_72=DEMDXL2a_72

For PPTs with DEMDXL2a_72 = missing or (DEMDXL2a_72=0 and SOURCE_DEMDXL2a_71 not in ("V7" or "V7+DOD")) then do:

If AD8FAILURE=1 or SISFAILURECAT=2 then DEMDXL2b_72=1

Else if AD8FAILURE=0 then DEMDXL2b_72=0

Else If AD8FAILURE=missing and SISFAILURECAT=0 then
DEMDXL2b_72=0

Else if AD8FAILURE=missing and SISFAILURECAT=1, 3, or missing
and DEMDXL2a_72=0 then DEMDXL2b_72=0

Else DEMDXL2b_72=missing

Source variable(s): DEMDXL2a_72, COGDIAG71, ALGDX71, AD8FAILURE, SISFAILURECAT

6.8 DATE_DEMDXL2b_72 (Date for dementia diagnosis level 2b)

Description: Date of diagnosis when the value of DEMDXL2b_72=1 or the last date of assessment when DEMDXL2b_72=0. When DEMDXL2b_72=NULL then the date will also be missing. Recall that the level 2b dementia variable will take on the level 2a value when it exists (except in some cases where the source was V5). The same is true for the level 2b date value. For those PPTs with a dementia diagnosis, the diagnosis date assigned will either be the date of the earliest hospitalization date with a dementia code, the V5 NCS exam date, the V7 NCS exam

date, the TICS/proxy interview date if level 2a is non-missing, the date the AD8 was executed, or the date the SIS was executed.

Type: Date

Algorithm: If DEMDXL2b_72 = missing then DATE_DEMDXL2b_72 = missing.

If DEMDXL2a_72=1 or (DEMDXL2a_72=0 and SOURCE_DEMDXL2a_72 in ("V7", "V7+DOD") then DATE_DEMDXL2b_72 = DATE_DEMDXL2a_72

Else if missing DEMDXL2a_72 or (DEMDXL2a_72=0 and SOURCE_DEMDXL2a_72 not in ("V7", "V7+DOD")):

if AD8FAILURE=1 and SISFAILURECAT=2 then do;

if demdxl2a_62=0 then do;

if (DEMENTEDCEL71=1 and
((dementedcel71_date_cond <= date_demdxl2a_62) or
(missing(date_demdxl2a_62) and
dementedcel71_date_cond < '01SEP13'd))) or
DEMENTEDCEL71=. then
DATE_DEMDXL2b_72=min(AD8FAILUREdate,
SISFAILUREDATE);

Else if DEMENTEDCEL71=1 and (.z<
date_demdxl2a_62<dementedcel71_date_cond or
(missing(date_demdxl2a_62) and
dementedcel71_date_cond >= '01SEP13'd)) then
DATE_DEMDXL2b_72 =
min(AD8FAILUREdate,SISFAILUREDATE,DEMENTED
CEL71_date_COND);

End;

Else DATE_DEMDXL2b_72=min(AD8FAILUREdate,
SISFAILUREDATE, DEMENTEDCEL71_Date1);

End;

Else if AD8FAILURE=1 and SISFAILURECAT ne 2 then do;

if demdxl2a_62=0 then do;

if (DEMENTEDCEL71=1 and
((dementedcel71_date_cond <= date_demdxl2a_62) or
(missing(date_demdxl2a_62) and
dementedcel71_date_cond < '01SEP13'd))) or
DEMENTEDCEL71=. then
DATE_DEMDXL2b_72=AD8FAILUREdate;

else if DEMENTEDCEL71=1 and (.z<
date_demdxl2a_62<dementedcel71_date_cond or
(missing(date_demdxl2a_62) and

```

        dementedcel71_date_cond >= '01SEP13'd)) then
        DATE_DEMDXL2b_72 = min(AD8FAILUREdate,
        DEMENTEDCEL71_date_COND);
    End;

    Else DATE_DEMDXL2b_72=min(AD8FAILUREdate,
    DEMENTEDCEL71_Date1);
End;

Else if AD8FAILURE NE 1 and SISFAILURECAT=2 then do;
    if demdxl2a_62=0 then do;
        if (DEMENTEDCEL71=1 and
        (dementedcel71_date_cond <= date_demdxl2a_62 or
        (missing(date_demdxl2a_62) and
        dementedcel71_date_cond < '01SEP13'd))) or
        DEMENTEDCEL71=. then
        DATE_DEMDXL2b_72=SISFAILUREDATE;

        else if DEMENTEDCEL71=1 and (.z<
        date_demdxl2a_62<dementedcel71_date_cond or
        (missing(date_demdxl2a_62) and
        dementedcel71_date_cond >= '01SEP13'd)) then
        DATE_DEMDXL2b_72 =
        min(SISFAILUREDATE,DEMENTEDCEL71_date_CON
        D);
    end;

    Else DATE_DEMDXL2b_72= minimum value of
    SISFAILUREDATE and DEMENTEDCEL71_DATE1;
End;
END;

Else if AD8FAILURE=0 then DATE_DEMDXL2b_72=
    AD8FAILUREDATE
Else if AD8FAILURE=NULL and SISFAILURECAT=0 then
    DATE_DEMDXL2b_72= SISFAILUREDATE
Else if AD8FAILURE=NULL and SISFAILURECAT= 1,3, or missing
    and DEMDXL2a_72=0 then DATE_DEMDXL2b_72=
    DATE_DEMDXL2a_72

For PPTs who have died:
if dateofdeath < date_demdxl2b_72 and source_demdxl1_71 ne "V7"
then date_demdxl2b_72=dateofdeath;

```

Source variable(s): DEMDXL2a_72, SOURCE_DEMDXL2a_72, DATE_DEMDXL2a_72, DEMDXL2b_72, DEMDXL2a_62, DATE_DEMDXL2a_62, AD8FAILURE, AD8FAILUREDATE, DEMENTEDCEL71,

DEMENTEDCEL71_DATE_COND, DEMENTEDCEL71_DATE1,
SISFAILURECAT, SISFAILUREDATE, DATEOFDEATH

**6.9 SOURCE_DEMDXL2b_72 (Diagnosis and date source for
DATE_DEMDXL2b_72)**

Description: Source variable created to indicate the diagnosis and data source for
DATE_DEMDXL2b_72

Type: Character

Algorithm: If DEMDXL2b_72 = missing then SOURCE_DEMDXL2b_72 should
be set to missing

If DEMDXL2a_72=1 or (DEMDXL2a_72=0 and SOURCE_
DEMDXL2a_72 in ("V7", "V7+DOD") then SOURCE_DEMDXL2b_72
= SOURCE_DEMDXL2a_72

Else if missing DEMDXL2a_72 or (DEMDXL2a_72=0 and
SOURCE_DEMDXL2a_72 not in ("V7", "V7+DOD")):

If AD8FAILURE=1 and SISFAILURECAT=2:
SOURCE_DEMDXL2b_72="AD8" if
DATE_DEMDXL2b_72=AD8FAILUREDATE OR

SOURCE_DEMDXL2b_72="2SIS" if
DATE_DEMDXL2b_72=SISFAILUREDATE OR

SOURCE_DEMDXL2b_72="AD8+2SIS+HOSP" if
DATE_DEMDXL2b_72=DEMENTEDCEL71_DATE_COND or
DEMENTEDCEL71_Date1

Else if AD8FAILURE=1 and SISFAILURECAT NE 2:
SOURCE_DEMDXL2b_72="AD8+HOSP" if
DATE_DEMDXL2b_72=DEMENTEDCEL71_DATE_COND or
DEMENTEDCEL71_Date1 OR

SOURCE_DEMDXL2b_72="AD8" if DATE_DEMDXL2b_72=
AD8FAILUREDATE

Else if AD8FAILURE NE 1 and SISFAILURECAT=2 then
SOURCE_DEMDXL2b_72="2SIS+HOSP" if
DATE_DEMDXL2b_72=DEMENTEDCEL71_DATE_COND or
DEMENTEDCEL71_Date1 OR

SOURCE_DEMDXL2b_72="2SIS" if DATE_DEMDXL2b_72=
SISFAILUREDATE

Else if AD8FAILURE=0 then SOURCE_DEMDXL2b_72= "AD8"

Else if AD8FAILURE=NULL and SISFAILURECAT=0 then
SOURCE_DEMDXL2b_72="2SIS"

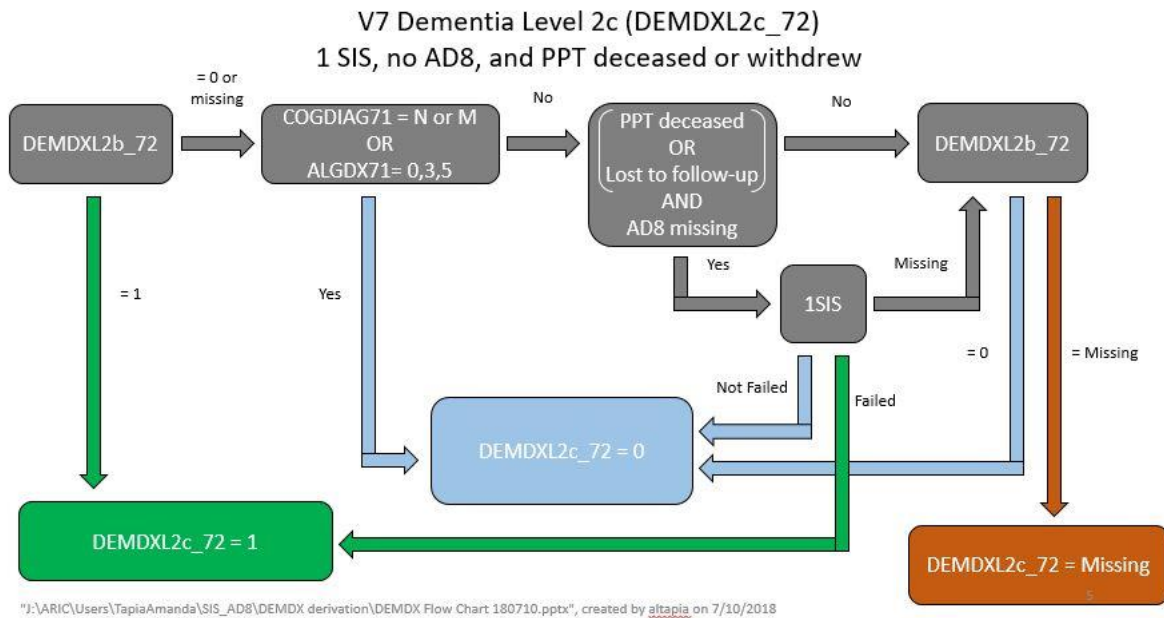
Else if AD8FAILURE=NULL and SISFAILURECAT= 1,3, or
missing and DEMDXL2a_72=0 then
SOURCE_DEMDXL2b_72= SOURCE_DEMDXL2a_72

For PPTs who have died:
if dateofdeath < date_demdxl2b_72 and source_demdxl1_71 ne "V7"
then SOURCE_DEMDXL2b_72=
strip(SOURCE_DEMDXL2b_72)||"+DOD"

Source variable(s): DEMDXL2a_72, SOURCE_DEMDXL2a_72, DATE_DEMDXL2a_72,
DEMDXL2b_72, AD8FAILURE, AD8FAILUREDATE,
SISFAILURECAT, SISFAILUREDATE,
DEMENTEDCEL71_DATE_COND, DEMENTEDCEL71_Date1,
DATEOFDEATH

Level 2c

For those PPTs who declined to be seen in person at V7 or were lost to follow up or deceased as of the end of V7 (15NOV2019), dementia was determined using a single prorated SIS score (Six Item Screener). The level 2b dementia diagnosis variable, **DEMDXL2c_72**, is equal to **DEMDXL2b_72** when the level 2b variable is non-missing (except in some cases where the source of **DEMDXL2b_72** is V6 and DEMDXL1_61=0). If level 2b was not present, an AD8 score was not available, and the PPT was lost to follow up or deceased as of 15NOV2019, then the value assigned was based on the single prorated SIS score.



6.10 DEMDXL2c_72 (Dementia diagnosis level 2c)

Description:

Indicator variable for dementia based on reviewer diagnosis, algorithmic syndromic diagnosis, failed AD8 (AD8 Dementia Screening Interview), two failed SIS (Six Item Screener), and one failed SIS when PPTs are lost to follow up or deceased. Diagnoses are prioritized, with the reviewer diagnosis being given highest priority, then the algorithmic syndromic diagnosis, AD8, and finally the SIS.

- **DEMDXL2c_72=1:** dementia was assigned at V7 level 2b (DEMDXL2b_72=1)
- **DEMDXL2c_72=0:** non-dementia was assigned at V7 level 2b by V7 reviewer classification or V7 algorithmic diagnosis (DEMDXL2b_72=0 AND COGDIAG71=N or M; OR ALGDX71 = 0, 3, 5). This allows us to replace any non-dementias assigned from V6 level 1 or V6 level 2 or dementia surveillance at V7 level 2b, but not replace the non-dementias assigned by V7 reviewer classification or algorithmic diagnosis.

- **DEMDXL2c_72=1:** participant has one failed SIS, does not have an available AD8, and is deceased or withdrew consent as of December 31, 2019.
- **DEMDXL2c_72=0:** non-dementia was assigned at V7 level 2b (DEMDXL2b_72=0) from dementia surveillance (AD8 or 2 SISs).
- **DEMDXL2c_72=0:** participant has one not failed SIS, does not have an available AD8, and is deceased or withdrew consent as of December 31, 2019.
- **DEMDXL2c_72=0:** non-dementia was assigned at V7 level 2b (DEMDXL2b_72=0). This carries forward those non-dementias assigned at V6 level 1 OR non-dementias assigned at V6 level 2, in the absence of the above information.
- **DEMDXL2c_72=NULL:** none of the above criteria are met

Format: 0=No, 1=Yes.

Type: Numeric

Algorithm: For PPTs with DEMDXL2b_72=1 or (DEMDXL2b_72=0 and SOURCE_DEMDXL2b_72 in ("V7", "V7+DOD")):
DEMDXL2c_72=DEMDXL2b_72

For PPTs with DEMDXL2b_72=missing or (DEMDXL2b_72=0 and SOURCE_DEMDXL2b_72 NOT in ("V7", "V7+DOD")):

If SISFAILURECAT=1 and AD8FAILURE=NULL AND (NULL<DTHDATE<=15NOV2019 OR (ICT1=0 AND NULL<ICT0a<=15NOV2019)) then DEMDXL2c_72=1

Else if SOURCE_DEMDXL2b_72 in ("2SIS", "AD8") then DEMDXL2c_72= DEMDXL2b_72

Else if SISFAILURECAT=3 and AD8FAILURE=NULL AND (NULL<DTHDATE<=15NOV2019 OR (ICT1=0 AND NULL<ICT0a<=15NOV2019)) then DEMDXL2c_72=0

Else if DEMDXL2b_72=0 then DEMDXL2c_72=0

Else DEMDXL2c_72 = NULL

Source variable(s): DEMDXL2b_72, SOURCE_DEMDXL2b_72, SISFAILURECAT, AD8FAILURE, DTHDATE, ICT1, ICT0a

6.11 DATE_DEMDXL2c_72 (Date for dementia diagnosis level 2c)

Description: Date of diagnosis when the value of DEMDXL2c_72=1 or the last date of assessment when DEMDXL2c_72=0. When DEMDXL2c_72=NULL

then the date will also be missing. Recall that the level 2c dementia variable will take on the level 2b value when it exists (except in some cases where the source was V5). The same is true for the level 2c date value. For those PPTs with a dementia diagnosis, the diagnosis date assigned will either be the date of the earliest hospitalization date with a dementia code, the V5 NCS exam date, the V7 exam date, the date of AD8 failure, or the date of the second failed SIS if level 2b is non-missing (except in some cases where SOURCE_DEMDXL2b_72="V5"). For PPTs who are lost to follow up or deceased with one failed SIS, the diagnosis date will be the earliest hospitalization date, the death date with a dementia code, or the date the SIS was executed.

Type: Date

Algorithm: If DEMDXL2c_72 = missing then DATE_DEMDXL2c_72 should be set to missing.

For PPTs with DEMDXL2b_72=1 or (DEMDXL2b_72=0 and SOURCE_DEMDXL2b_72 in ("V7", "V7+DOD")):
DATE_DEMDXL2c_72=DATE_DEMDXL2b_72

For PPTs with DEMDXL2b_72=NULL or (DEMDXL2b_72=0 and SOURCE_DEMDXL2b_72 not in ("V7", "V7+DOD")):
If SISFAILURECAT=1 and AD8FAILURE=NULL AND
(NULL<DTHDATE<=15NOV2019 OR (ICT1=0 AND
NULL<ICT0a<=15NOV2019)) then do;

 if demdxl2a_62=0 then do;
 if (dementedcel71=1 and ((dementedcel71_date_cond
 <= date_demdxl2a_62) or (missing(date_demdxl2a_62)
 and dementedcel71_date_cond < '01SEP13'd))) or
 dementedcel71=. then
 DATE_DEMDXL2c_72=SISFAILUREDATE;

 else if dementedcel71=1 and (.z<
 date_demdxl2a_62<dementedcel71_date_cond or
 (missing(date_demdxl2a_62) and
 dementedcel71_date_cond >= '01SEP13'd)) then
 DATE_DEMDXL2c_72= min(SISFAILUREDATE,
 DEMENTEDCEL71_DATE_COND);

 end;

 Else DATE_DEMDXL2c_72= min(SISFAILUREDATE,
 DEMENTEDCEL71_Date1);

End;

Else if source_demdxl2b_72 in ('2SIS','AD8') then
DATE_DEMDXL2c_72=date_DEMDXL2b_72;

Else if SISFAILURECAT=3 and AD8FAILURE=NULL AND
((NULL<dthdate<= 15NOV2019) OR (ict1=0 and
NULL<ict0a<=15NOV2019)) then DATE_DEMDXL2c_72=
SISFAILUREDATE;

Else if DEMDXL2b_72=0 then
DATE_DEMDXL2c_72=DATE_DEMDXL2b_72

For PPTs who have died:
if dateofdeath < date_demdxl2c_72 and source_demdxl1_71 NE "V7"
then DATE_DEMDXL2c_72=dateofdeath;

Source variable(s): DEMDXL2c_72, DEMDXL2b_72, SOURCE_DEMDXL2b_72,
DATE_DEMDXL2b_72, DEMDXL2a_62, DATE_DEMDXL2a_62,
SISFAILURECAT, AD8FAILURE, DTHDATE, ICT1, ICT0a,
SISFAILUREDATE, DEMENTEDCEL71,
DEMENTEDCEL71_DATE_COND, DEMENTEDCEL71_Date1,
SOURCE_DEMDXL1_71, DATEOFDEATH

6.12 SOURCE_DEMDXL2c_72 (Diagnosis and date source for DATE_DEMDXL2c_72)

Description: Source variable created to indicate the diagnosis and data source for
DATE_DEMDXL2c_72

Type: Character

Algorithm: If DEMDXL2c_72 = missing then SOURCE_DEMDXL2c_72 should be
set to missing.

For PPTs with DEMDXL2b_72=1 or (DEMDXL2b_72=0 and
SOURCE_DEMDXL2b_72 in ("V7", "V7+DOD")):
SOURCE_DEMDXL2c_72= SOURCE_DEMDXL2b_72

For PPTs with DEMDXL2b_72=NULL or (DEMDXL2b_72=0 and
SOURCE_DEMDXL2b_72 not in ("V7", "V7+DOD")):
If SISFAILURECAT=1 and AD8FAILURE=NULL AND
(NULL<DTHDATE<=15NOV2019 OR (ICT1=0 AND
NULL<ICT0a<=15NOV2019)) then SOURCE_DEMDXL2c_72= "1SIS"
if DATE_DEMDXL2c_72=SISFAILUREDATE
OR ="1SIS+HOSP" if
DATE_DEMDXL2c_72=DEMENTEDCEL71_DATE_COND or
DEMENTEDCEL71_Date1

Else if SOURCE_DEMDXL2b_72 in ("2SIS", "AD8") then
SOURCE_DEMDXL2c_72 = SOURCE_DEMDXL2b_72

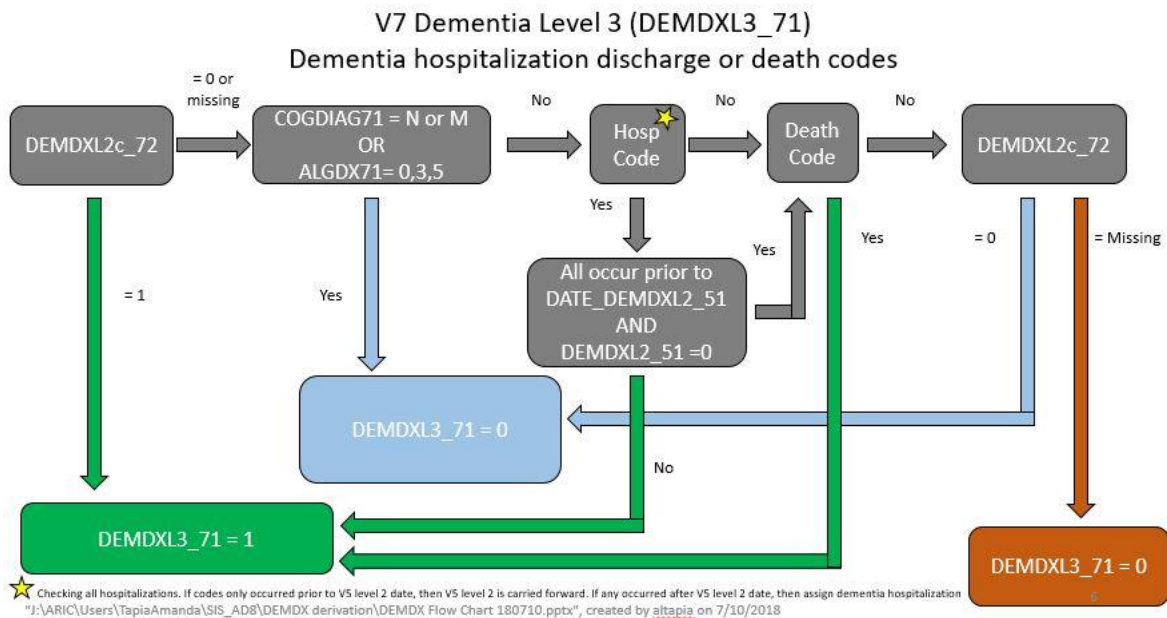
Else if SISFAILURECAT=3 and AD8FAILURE=NULL AND
((NULL<DTHDATE<= 15NOV2019) OR (ICT1=0 and
NULL<ICT0a<=15NOV2019)) then SOURCE_DEMDXL2c_72= "1SIS"
Else if DEMDXL2b_72=0 then
SOURCE_DEMDXL2c_72=SOURCE_DEMDXL2b_72

For PPTs who have died:
if dateofdeath < date_demdxl2c_72 and source_demdxl1_71 NE "V7"
then source_demdxl2c_72=strip(source_demdxl2c_72)||"+DOD"

Source variable(s): DEMDXL2c_72, DATE_DEMDXL2c_72, DEMDXL2b_72,
SOURCE_DEMDXL2b_72, SISFAILURECAT, AD8FAILURE,
DTHDATE, ICT1, ICT0a, SOURCE_DEMDXL1_71, DATEOFDEATH

Level 3

Dementia hospitalization discharge codes and diagnostic codes from death certificates were used to assess dementia for the PPTs who had no V5, V6, or V7 NCS assessments and no AD8 or SIS interviews. Level 3 dementia diagnosis, **DEMDXL3_71**, is assigned as the level 1 diagnosis when available, the level 2a diagnosis when available, the level 2b diagnosis when available, or the level 2c when available (except in some cases where the source of a leveled dementia diagnosis was V6 and DEMDXL1_61=0); dementia hospitalization codes are then considered followed by dementia codes found on the death certificate.



6.13 DEMDXL3_71 (Dementia diagnosis level 3)

Description:

Indicator variable for dementia based on reviewer diagnosis, algorithmic syndromic diagnosis, AD8 (AD8 Dementia Screening Interview), SIS (Six Item Screener), dementia codes on the cohort eligibility form (CELB), and dementia codes on the death certificate form (DTH). Diagnoses are prioritized, with the reviewer diagnosis being given highest priority, then the algorithmic syndromic diagnosis, AD8, SIS, CELB dementia codes, and finally the DTH form.

- **DEMDXL3_71=1:** dementia was assigned at V7 level 2c (DEMDXL2c_71=1)
- **DEMDXL3_71=0:** non-dementia was assigned at V7 level 2c by V7 reviewer classification or V7 algorithmic diagnosis (DEMDXL2c_72=0 AND COGDIAG71=N or M; OR ALGDX71 = 0, 3, 5). This allows us to replace any non-dementias assigned from V6 level 1 or V6 level 2 or dementia surveillance at V7 level 2b/2c, but not replace the non-dementias assigned by V7 reviewer classification or algorithmic diagnosis.

- **DEMDXL3_71=1:** participant has at least one dementia hospitalization discharge code occurring after V5 information (DEMDXL2_51=0) OR any dementia hospitalization discharge code in the absence of V5 information (DEMDXL2_51=.).
- **DEMDXL3_71=1:** participant has any dementia death code
- **DEMDXL3_71=0:** non-dementia was assigned at V7 level 2c (DEMDXL2c_72=0). This carries forward those non-dementias assigned at V6 level 1 OR non-dementias assigned at V6 level 2 OR non-dementias from dementia surveillance at V7 level 2b/2c, in the absence of the above information.
- **DEMDXL3_71=0:** none of the above criteria are met. Note: There are no missing values in DEMDXL3_61.

Format: 0=No, 1=Yes.

Type: Numeric

Algorithm: For PPTs with DEMDXL2c_72=1 or (demdxl2c_72=0 and source_demdxl2c_72 in ("V7", "V7+DOD")):
DEMDXL3_71=DEMDXL2c_72

For PPTs with DEMDXL2c_72=NULL or (demdxl2c_72=0 and source_demdxl2c_72 not in ("V7", "V7+DOD")):
If COGDIAG71 in ("N", "M") or ALGDX in (0,3,5)
then DEMDXL3_71 = 0

Else If DEMENTEDCEL71=1 and DEMDXL2_61=0 and the hospitalizations did not all occur prior to DATE_DEMDXL2_61 then
DEMDXL3_71 = 1

Else if DEMENTEDDTH71=1 and the death occurred before '15NOV2019', then DEMDXL3_71=1

Else if DEMDXL2c_72=0 then DEMDXL3_71=0

Otherwise DEMDXL3_71=0

Source variable(s): DEMDXL2c_72, COGDIAG71, ALGDX71, DEMENTEDCEL71, DEMENTEDDTH71, DEMDXL2_51, DATE_DEMDXL2_51

6.14 DATE_DEMDXL3_71 (Date for dementia diagnosis level 3)

Description: Date of diagnosis when the value of DEMDXL3_71=1 or the last date of assessment when DEMDXL3_71=0. When DEMDXL3_71=0 and DEMDXL2c_72 is missing then the date will also be missing. Recall that the level 3 dementia variable will take on the level 2c value when it exists (except in some cases where the source is V5). The same is

true for the level 3 date value. For those PPTs with a dementia diagnosis, the diagnosis date assigned will either be the date of the earliest hospitalization date with a dementia code, date of death for PPTs with a dementia death code, V5 NCS exam date, V7 exam date, TICS or RDS date, AD8 date, or SIS date if level 2c is non-missing.

Type: Date

Algorithm: For PPTs with DEMDXL2c_72=1 or (DEMDXL2c_72=0 AND SOURCE_DEMDXL2c_72 in ("V7", "V7+DOD")):
DATE_DEMDXL3_71=DATE_DEMDXL2c_72

For PPTs with DEMDXL2c_72=NULL or (DEMDXL2c_72=0 AND SOURCE_DEMDXL2c_72 not in ("V7", "V7+DOD")):
if (DEMDXL2c_72=0) then do;
 if (dementedcel71=1 and ((dementedcel71_date_cond <= date_demdxl2a_62) or (missing(date_demdxl2a_62) and dementedcel71_date_cond < '01SEP13'd))) then do;
 if (dementedddth71=1 and
 NULL<dementedddth71_date<=15NOV2019) then
 DATE_DEMDXL3_71_71=dementedddth71_date;
 else DATE_DEMDXL3_71=DATE_DEMDXL2c_72;
 end;
 else if dementedcel71=1 and
 (date_demdxl2a_62<dementedcel71_date_cond or
 (missing(date_demdxl2a_62) and dementedcel71_date_cond
 >= '01SEP13'd)) then DATE_DEMDXL3_71 =
 DEMENTEDCEL71_DATE_COND;
 else if (dementedddth71=1 and
 NULL<dementedddth71_date<=15NOV2019) then
 date_demdxl3_71=dementedddth71_date;
 else DATE_DEMDXL3_71=DATE_DEMDXL2c_72;
end;

else if (DEMENTEDCEL71=1 and
NULL<DEMENTEDCEL71_date1<=15NOV2019) or
(DEMENTEDDTH71=1 and
NULL<DEMENTEDDTH71_date<=15NOV2019) then do;
 If DEMENTEDCEL71=1 then date_demdxl3_71=
 DEMENTEDCEL71_date1;
 Else if DEMENTEDDTH71=1 then
 date_demdxl3_71=DEMENTEDDTH71_date;
End;

For PPTs who have died:
if dateofdeath < date_demdxl3_71 and source_demdxl1_71 NE "V7"
then date_demdxl3_71=dateofdeath;

Otherwise DATE_DEMDXL3_71=NULL

Source variable(s): DEMDXL2c_72, SOURCE_DEMDXL2c_72, DATE_DEMDXL2c_72,
DATE_DEMDXL2a_62, DEMENTEDCEL71, DEMENTEDDTH71,
DEMENTEDCEL71_DATE_COND, DEMENTEDCEL71_Date1,
DEMENTEDDTH71_DATE, SOURCE_DEMDXL1_71,
DATEOFDEATH

6.15 SOURCE_DEMDXL3_71 (Diagnosis and date source for DATE_DEMDXL3_71)

Description: Source variable created to indicate the diagnosis and data source for
DATE_DEMDXL3_71. The diagnosis source and diagnosis date for
DEMDXL3_71 is best displayed in a table, shown at the bottom of this
block.

Type: Character

Algorithm: For PPTs with DEMDXL2c_72=1 or (DEMDXL2c_72=0 AND
SOURCE_DEMDXL2c_72 in ("V7", "V7+DOD")):
SOURCE_DEMDXL3_71=SOURCE_DEMDXL2c_72

For PPTs with DEMDXL2c_72=NULL or (DEMDXL2c_72=0 AND
SOURCE_DEMDXL2c_72 not in ("V7", "V7+DOD")):

If DATE_DEMDXL3_71=DEMENTEDCEL71_DATE_COND or
DEMENTEDCEL71_Date1 then SOURCE_DEMDXL3_71='HOSP'

Else if DATE_DEMDXL3_71=DEMENTEDDTH71_DATE and the
death occurred before '15NOV2019' then SOURCE_DEMDXL3_71 =
'DTH'

Else SOURCE_DEMDXL3_71= SOURCE_DEMDXL2c_72 (See table
below for more granular assignments for SOURCE_DEMDXL3_71.)

Otherwise SOURCE_DEMDXL3_71='NO CODE'

For PPTs who have died:
if dateofdeath < date_demdxl3_71 and source_demdxl1_71 NE "V7"
then source_demdxl3_71=strip(source_demdxl3_71)||"+DOD"

Source variable(s): DEMDXL2c_72, SOURCE_DEMDXL2c_72, DATE_DEMDXL3_71,
DEMENTEDCEL71_DATE_COND, DEMENTEDCEL71_Date1,

DEMENTEDDTH71_DATE, SOURCE_DEMDXL1_71,
DATEOFDEATH

SOURCE_DEMDXL3_71 - Diagnosis and date source for DATE_DEMDXL3_71		
Source code	Source of the diagnosis	Date of the diagnosis
1SIS	1 SIS	SIS
1SIS+HOSP	1 SIS	Hospitalization discharge
2SIS	2 SIS	SIS
2SIS+HOSP	2 SIS	Hospitalization discharge
AD8	AD8	AD8
AD8+DOD	AD8	Date of death (from STATUS71)
AD8+HOSP	AD8	Hospitalization discharge
DTH	Dementia death code	Dementia death code
DTH+DOD	Dementia death code	Date of death (from STATUS71)
HOSP	Dementia hospitalization code	Hospitalization discharge
HOSP+DOD	Dementia hospitalization code	Date of death (from STATUS71)
NO CODE	No available information	NULL
RDS Dead	RDS Dead	RDS Dead
RDS Live	RDS Live	RDS Live
RDS Live+DOD	RDS Live	Date of death (from STATUS71)
RDS+DTH	RDS	Dementia death code
RDS+DTH+DOD	RDS	Date of death (from STATUS71)
RDS+HOSP	RDS	Hospitalization discharge
TICS	TICS	TICS
TICS+HOSP	TICS	Hospitalization discharge
V5	V5 NCS exam	V5 visit
V5+HOSP	V5 NCS exam	Hospitalization discharge
V6	V6 NCS exam	V6 visit
V6+HOSP	V6 NCS exam	Hospitalization discharge
V6+RDS Live	V6 NCS exam, RDS Live	RDS
V6+RDS+HOSP	V6 NCS exam, RDS	Hospitalization discharge
V6+TICS	V6 NCS exam, TICS	TICS
V7	V7 NCS exam	V7 visit
V7+HOSP	V7 NCS exam	Hospitalization discharge
V7+RDS Live	V7 NCS exam, RDS Live	RDS
V7+RDS+HOSP	V7 NCS exam, RDS	Hospitalization discharge
V7+TICS	V7 NCS exam, TICS	TICS
V7+TICS+HOSP	V7 NCS exam, TICS	Hospitalization discharge
SIS = Six Item Screener, AD8 = AD8 Dementia Screening Interview, RDS = Retrospective dementia surveillance, TICS = Telephone Interview for Cognitive Status		

7. SURVIVAL ANALYSIS VARIABLES

Dementia survival analysis variables are based primarily on the Level 3 dementia diagnosis variable (see Leveled Dementia Diagnoses section). The variables described in this section are designed to be used for analysis of time to Level 3 Dementia.

CENSDAT7, used in some definitions in this section, is a surveillance variable created by the Coordinating Center for use in survival analyses where the endpoint is anything other than death. CENSDAT7 is found in the dataset INC_BY17; a description of CENSDAT7 is found in the derived variable dictionary for INC_BY17.

7.1 DEMDXL3CENS_71 (Censored level 3 dementia diagnosis)

Description: Censored level 3 dementia diagnosis is level 3 dementia diagnosis (DEMDXL3_71), excluding discharge or death certificate codes that occurred after the date of last visit/phone contact in which hospitalization information was collected for PPTs lost to follow-up (CENSDAT7). There are no missing values for censored level 3 dementia diagnosis: lost to follow-up PPTs with a hospital or death code occurring after lost to follow-up and before January 1, 2018 are set to 0 (no dementia).

NOTE: For survival analysis of time-to-dementia, use this variable as the censoring variable with the event/censoring date variable, **COXDATE_DEMDXL3_71**, defined below.

Format: 0=No, 1=Yes

Algorithm: For PPTs with DEMDXL2c_72=1 or (DEMDXL2c_72=0 and DEMDXL3_71=0):
DEMDXL3CENS_71 = DEMDXL2c_72

Else for PPTs with non-missing DATE_DEMDXL3_71 and DATE_DEMDXL3_71 ≤ CENSDAT7:
DEMDXL3CENS_71 = DEMDXL3_71

Else:
DEMDXL3CENS_71 = 0

Type: Numeric

Source variable(s): DEMDXL2c_72, DEMDXL3_71, DATE_DEMDXL3_71, CENSDAT7 (INCBY17 data set)

7.2 DATE_DEMDXL3CENS_71 (Date for censored level 3 dementia diagnosis)

Description: Date of censored level 3 dementia diagnosis is the earliest date indicated from Visit 5, Visit 7, TICS/proxy interview, AD8, SIS, hospital discharge code or death code. For PPTs with DEMDXL3CENS_71 = Yes, it is the earliest date that dementia criteria were met from Visit 5, Visit 7, TICS/proxy interview, AD8, SIS, hospital discharge code or death code. For PPTs with DEMDXL3CENS_71 = No, it is the date of Visit 5, Visit 7, TICS/proxy interview, AD8, or SIS. For PPTs who died, were lost to follow-up, or refused, it is the ARIC censoring date (CENSDAT7, if prior to January 1, 2018); otherwise, the date is set to December 31, 2019.

NOTE: This variable is programmed as an interim step and should not be used for analysis.

Algorithm: For PPTs with [DEMDXL2c_72=1 or (DEMDXL2c_72=0 AND DEMDXL3_71=0)] and non-missing DATE_DEMDXL2c_72:
DATE_DEMDXL3CENS_71 = DATE_DEMDXL2c_72

Else for PPTs with [DEMDXL2c_72=1 or (DEMDXL2c_72=0 AND DEMDXL3_71=0)] and missing DATE_DEMDXL2c_72:
DATE_DEMDXL3CENS_71 = '15NOV2019'

Else for PPTs with non-missing DATE_DEMDXL3_71 and DATE_DEMDXL3_71 ≤ CENSDAT7:
DATE_DEMDXL3CENS_71 = DATE_DEMDXL3_71

Else:
DATE_DEMDXL3CENS_71 = CENSDAT7

Type: Date

Source variable(s): DEMDXL2c_72, DEMDXL3_71, DATE_DEMDXL2c_72, DATE_DEMDXL3_71, CENSDAT7

7.3 YEAR_DEMDXL3_71 (Year of censored level 3 dementia diagnosis)

Description: Year of censored level 3 dementia diagnosis (DATE_DEMDXL3CENS_71).

Type: Date

Algorithm: YEAR_DEMDXL3_71 = year(DATE_DEMDXL3CENS_71)

Source variable(s): DATE_DEMDXL3CENS_71

7.4 COXDATE_DEMDXL3_71 (Adjusted date of censored level 3 dementia diagnosis)

Description: Date of censored level 3 dementia diagnosis (DATE_DEMDXL3CENS_71) adjusted for data collected from proxy interview, AD8 occurring after death, hospital discharge code, or death code. Subtracting 180 days from DATE_DEMDXL3CENS_71 assumes that the dementia started midpoint within a year prior to the date.

NOTE: For survival analysis of time-to-dementia, use this variable as the event/censoring date, along with the censoring variable **DEMDXLCENS_71** defined above.

Algorithm: For participants with SOURCE_DEMDXL3_71 in ("1SIS+HOSP", "2SIS+HOSP", "AD8+DOD", "AD8+HOSP", "DTH", "DTH+DOD", "HOSP", "HOSP+DOD", "RDS Dead", "RDS Live", "RDS Live+DOD", "RDS+DTH", "RDS+DTH+DOD", "RDS+HOSP", "TICS+HOSP", "V5+HOSP", "V6+HOSP", "V7+HOSP", "V7+RDS Live", "V7+RDS+HOSP");
COXDATE_DEMDXL3_71 = DATE_DEMDXL3CENS_71 – 180;

Else:
COXDATE_DEMDXL3_71 = DATE_DEMDXL3CENS_71

Type: Date

Source variable(s): SOURCE_DEMDXL3_71, DATE_DEMDXL3CENS_71

7.5 DEMDXL3_EXCL_LTFU_71 (Level 3 Dementia Diagnosis excluding PPTs who are lost to follow-up and had a dementia code after lost to follow-up)

Description: DEMDXL3_EXCL_LTFU_71 is the same as the censored level 3 dementia diagnosis (DEMDXL3CENS_71) except that here, lost to follow up PPTs with a hospitalization or death code after lost to follow up and before January 1, 2018 are set to missing. These PPTs are excluded in analyses of incident level 3 dementia because events for lost to follow-up PPTs cannot be systematically identified.

NOTE: Use this variable for analysis of **incident** level 3 dementia (such analysis is discouraged in favor of time-to-dementia analysis).

Format: 0=No, 1=Yes, NULL=Lost to follow up

Algorithm: For PPTs with DATE_DEMDXL3_71 after CENSDAT7 and [missing DEMDXL2c_72 OR (DEMDXL2c_72=0 AND DEMDXL3_71=1)]:

DEMDXL3_EXCL_LTFU_71 = NULL

Else:

DEMDXL3_EXCL_LTFU_71 = DEMDXL3_71

Type: Numeric

Source variable(s): DATE_DEMDXL3_71, CENSDAT7, DEMDXL2c_72, DEMDXL3_71

APPENDIX A: LEVELED DEMENTIA INTERMEDIATE VARIABLES

Appendix A provides the descriptions and algorithms for the intermediate, temporary variables used to derive the leveled dementia variables (level 3) in Section 6. These include variables from the Six Item Screener (SIS) and AD8 Dementia Screening Interview (ADS) from annual and semi-annual follow up as well as hospital discharge diagnosis and procedure codes (Cohort Event Eligibility form, CELB) and death codes (Death Certificate form, DTHA) from community surveillance.

A1. DEATH AND HOSPITALIZATION CODES

A1.1 DEMENTEDCEL71 (Dementia codes in CEL)

Description: Indicator for the presence of ICD-9 or ICD-10 Dementia Hospitalization Code on the Cohort Event Eligibility form. Although a single participant may have multiple records with a dementia hospitalization code, DEMENTEDCEL71 is a one-record-per-SUBJECTID indicator for the presence of any dementia hospitalization code.

Type: numeric

Algorithm:

DEMENTEDCEL71	Description
1	if any of the CEL10* variables contains an ICD code from the following list: 290, 294.0, 294.1, 294.2, 294.9, 331.8, 331.82, 331.89', 331.0, 331.1, 331.2, 331.7, 331.9, F04, F06.8, G94, G31.9, G31.83, G31.89, F01, F01.5, F01.50, F01.51, F02, F02.8, F02.80, F02.81, F03, F03.9, F03.90, F03.91, G30, G30.0, G30.1, G30.8, G30.9, G31.0, G31.01, G31.09, G31.1, G31.83, R41, R41.81, R41.84, R41.89, R41.9 AND CELB04 is non-missing and occurs on or before 15NOV2019 *a-z, a1-z1, a2-z2, or a3-z3
NULL	Otherwise

Related variable(s): CELB10a-CELB10z, CELB10a1-CELB10z1, CELB10a2-CELB10z2, CELB10a3-CELB10z3, CELB04

A1.2 DEMENTEDCEL71_DATE1-DEMENTEDCEL71_DATE# (Date of the occurrence of a CEL with dementia code)

Description: Date variables that correspond to the date of discharge (CELB04) among CEL Cohort Event Eligibility records by participant; where the codes contain a dementia hospitalization code. Since participants may have multiple records with a dementia hospitalization code, DEMENTEDCEL71_DATE1 denotes the first instance, DEMENTEDCEL71_DATE2 denotes the second instance, etc. If no dementia hospitalization is found for a participant, then all DEMENTEDCEL71_DATE# variables are missing.

Type: date

Algorithm:

DEMENTEDCEL71_DATE#	Description
CELB04	If DEMENTEDCEL71=1 then DEMENTEDCEL71_DATE# is the date of discharge for each of the instances in which a dementia hospitalization code was identified.
NULL	Otherwise

Related variable(s): DEMENTEDCEL71, CELB04

A1.3 DEMENTEDDTH71 (Dementia codes in DTH)

Description: Indicator for the presence of ICD-9 or ICD-10 Dementia Code on the Death Certificate Form (1=Yes, 0=No). Although a single participant may have multiple records with a death code, DEMENTEDDTH71 is a one-record-per-SUBJECTID indicator for the presence of any dementia death code. DEMENTEDDTH71=1 denotes the first occurrence of any dementia death code, and DEMENTEDDTH71=0 denotes that no dementia death code was identified.

Type: numeric

Algorithm:

DEMENTEDDTH71	Description
1	if any of DTHA19a-DTHA19j contains any one of the ICD codes from the following list: 290, 294.0, 294.1, 294.2, 294.9, 331.8, 331.82, 331.89', 331.0, 331.1, 331.2, 331.7, 331.9, F04, F06.8, G94, G31.9, G31.83, G31.89, F01, F01.5, F01.50, F01.51, F02, F02.8, F02.80, F02.81,

	F03, F03.9, F03.90, F03.91, G30, G30.0, G30.1, G30.8, G30.9, G31.0, G31.01, G31.09, G31.1, G31.83, R41, R41.81, R41.84, R41.89, R41.9 AND DTHA09 is non-missing and occurs on or before 15NOV2019
0	Otherwise

Related variable(s): DTHA19a through DTHA19j, DTHa09

A1.4 DEMENTEDDTH71_DATE (Date of death for PPT with a dementia death code)

Description: Date variable that corresponds to the death date for the participant when a dementia code is found on the death record. Although a single participant may have multiple records with a death code, DEMENTEDDTH71_DATE denotes the first occurrence of a dementia death code.

Type: date

Algorithm:

DEMENTEDDTH71_DATE	Description
DTHA09	If DEMENTEDDTH71=1 then the corresponding date is the date of death
NULL	Otherwise

Related variable(s): DEMENTEDDTH71, DTHA09

A1.5 DEMENTEDCEL71_DATE_COND (DEMENTEDCEL71_DATE conditional on dementia information available at V5)

Description: Date variable that corresponds to the date of discharge (CELB04) among CEL Cohort Event Eligibility records by participant; where the codes contain a dementia hospitalization code, conditional on dementia information available at V5 (DEMDXL2_51). This variable summarizes the DEMENTEDCEL71_DATE1 through DEMENTEDCEL71_DATE# variables above, based on the timing of available V5 level 2 dementia information. DEMENTEDCEL71_DATE_COND is the first instance of a hospitalization code (DEMENTEDCEL71_DATE1) if there is no V5 information OR all hospitalization codes occur after V5 OR all

hospitalization codes occur before V5. If V5 information is available between hospitalization dates, then DEMENTEDCEL71_DATE_COND is the first date after the V5 date (or after 01SEP2013 if V5 date is missing).

Type: Date

Algorithm:

DEMENTEDCEL71_DATE_COND	Description
DEMENTEDCEL71_DATE1	If dementia codes are in CEL AND there is no dementia information available at level 2 at V5 OR all dementia hospitalization codes occur before V5 level 2 information OR all dementia hospitalization codes occur after V5 level 2 information
DEMENTEDCEL71_DATE2 – DEMENTEDCEL71_DATE#	If dementia codes are in CEL AND Dementia information at V5 level 2 occurs between dates of hospitalization codes then it's the first hospitalization date occurring after V5 level 2 date (or after 01SEP2013 if V5 date is missing).
NULL	Otherwise

Related Variable(s): DEMENTEDCEL71, DATE_DEMDXL2_51, DEMDXL2_51,
DEMENTEDCEL71_DATE1-DEMENTEDCEL71_DATE#

A2. ADS VARIABLES (MULTIPLE RECORDS PER PPT)

A2.1 ADSLEADRESP (Number of responses (Yes or No) to lead in questions)

Description: The number of responses to the lead in questions on the ADS form.
Note: ADS lead in questions refers to variables ADS3 ADS4 ADS5 ADS6 ADS7 ADS8 ADS9 ADS10.

Type: numeric

Algorithm:

ADSLeadResp	Description
1-8	Count of "Y" or "N" responses to ADS lead in questions. ADSLeadResp=1 if only one question was answered, ADSLeadResp=2 if two questions were answered, etc.
0	If there are no responses (missing) to ADS lead in questions

Related variable(s): ads3 ads4 ads5 ads6 ads7 ads8 ads9 ads10

A2.2 ADSLEADY (Number of Yes responses to lead in questions)

Description: The number of "Yes" responses given to lead in questions on the ADS form.
Note: ADS lead in questions refers to variables ADS3 ADS4 ADS5 ADS6 ADS7 ADS8 ADS9 ADS10.

Type: numeric

Algorithm:

ADSLeadY	Description
1-8	Count of "Y" responses to ADS lead in questions. ADSLeadY=1 if only one response was "Y", ADSLeadY=2 if two responses were "Y", etc.
0	If there are no "Y" responses to ADS lead in questions

Related variable(s): ads3 ads4 ads5 ads6 ads7 ads8 ads9 ads10

A2.3 ADSLEADN (Number of 'No' responses to lead in questions)

Description: The number of "No" responses given to lead in questions on the ADS form.

Note: ADS lead in questions refers to variables ADS3 ADS4 ADS5 ADS6 ADS7 ADS8 ADS9 ADS10.

Type: numeric

Algorithm:

ADSLeadN	Description
1-8	Count of “N” responses to ADS lead in questions. ADSLeadN=1 if only one response was “N”, ADSLeadN=2 if two responses were “N”, etc.
0	If there are no “N” responses to ADS lead in questions

Related variable(s): ads3 ads4 ads5 ads6 ads7 ads8 ads9 ads10

A2.4 ADSSUBRESP (Number of responses (Yes or No) to sub questions)

Description: The number of responses to the sub questions on the ADS form.
Note: ADS sub questions refers to variables ADS3a ADS4a ADS5a ADS6a ADS7a ADS8a ADS9a ADS10a.

Type: numeric

Algorithm:

ADSSubResp	Description
1-8	Count of “Y” or “N” responses to ADS sub questions. ADSSubResp=1 if only one sub question was answered, ADSSubResp=2 if two sub questions were answered, etc.
0	If there are no responses (missing) to ADS sub questions

Related variable(s): ads3a ads4a ads5a ads6a ads7a ads8a ads9a ads10a;

A2.5 AD8aScore (Number of ‘Yes’ responses to sub questions (AD8 Score), conditional on the expected number of responses)

Description: AD8 Score is the number of “Yes” responses to sub questions following “Yes” responses to lead in questions. The number of ‘Yes’ responses to lead in questions is equivalent to the number of expected responses to sub questions. An AD8 score is only calculated if the participant responds (Yes or No) to at least 3 lead in questions AND 50% or more of the expected number of sub questions are answered OR if fewer than 50% of the expected number of sub

questions are answered then 50% or more of responses to lead in questions should be 'No'.

Type: numeric

Algorithm:

AD8aScore	Description
1-8	Count of "Y" responses to ADS sub questions if there are three or more responses to lead in questions AND: 1) There is a sub question response for half or more of the "Y" responses to lead in questions OR 2) If there are sub question responses for less than half of the "Y" responses to lead in questions, but "N" responses make up half or more of the lead in questions
0	There are no "Y" responses to ADS sub questions if there are three or more responses to lead in questions AND: 1) There is a sub question response for half or more of the "Y" responses to lead in questions OR 2) If there are sub question responses for less than half of the "Y" responses to lead in questions, but "N" responses make up half or more of the lead in questions
NULL	Otherwise

Related variable(s): ads3a ads4a ads5a ads6a ads7a ads8a ads9a ads10a

A2.6 AD8Failure (AD8 failure (score >= 2))

Description: Indicator variable for AD8 failure, defined as an AD8 score >= 2.

Type: numeric

Algorithm:

AD8Failure	Description
1	If AD8 Score is 2 or greater then AD8 is failed
0	If AD8 Score is non-missing and less than 2 then AD8 is not failed
NULL	If AD8 score is missing

Related variable(s): ad8ascore

A3. ADS VARIABLES (ONE RECORD PER PPT)

A3.1 AD8FAILURE (Any failed AD8 (score >=2) among those attempted)

Description: Since a single participant may have multiple AD8 evaluations, this AD8FAILURE variable differs from that in the above section. This variable is a one-record-per-participant indicator variable for any AD8 failure (i.e. one or more AD8 failures among those attempted). Failure is defined as an AD8 score >= 2.

Type: numeric

Algorithm:

AD8Failure	Description
1	If there are one or more AD8 Score(s) of 2 or greater
0	If there are no failed AD8s (all non-missing scores are less than 2)
NULL	All AD8 scores are missing

Related variable(s): AD8FAILURE1-AD8FAILURE#

A3.2 AD8FAILUREDATE (Date of first AD8 failed or last observed not failed)

Description: Date variable that corresponds to the earliest date the AD8 was failed or the date of the last AD8 that was not failed.

Type: Date

Algorithm:

AD8FailureDate	Description
ADS0a	If AD8Failure=1 then AD8FAILUREDATE is the earliest ADS date at which the first failure occurred
ADS0a	If AD8Failure=0 then AD8FAILUREDATE is the latest ADS date at which the last observed AD8 was not failed
.	If AD8Failure is missing

Related Variable(s): AD8Failure, ADS0a

A4. SIS VARIABLES (MULTIPLE RECORDS PER PPT)

A4.1 SISAttempt (SIS sum of attempted (Correct=C or Incorrect=I) responses)

Description: Number of attempted responses to the Six Item Screener questions SIS3, SIS4, SIS5, SIS6, SIS7, and SIS8. Responses that are correct (C) or incorrect (I) are counted as attempted.

Type: numeric

Algorithm:

SISAttempt	Description
1-6	Count of attempted responses "C" or "I" to SIS questions. SISAttempt=1 if only one question had a response, SISAttempt=2 if two questions have a response, etc.
0	If there are no attempted responses to SIS questions

Related variable(s): sis3, sis4, sis5, sis6, sis7, sis8

A4.2 SISScore (SIS raw score (sum of correct responses))

Description: SIS raw score indicating the number of correct responses (C) to the Six Item Screener questions SIS3, SIS4, SIS5, SIS6, SIS7, and SIS8. If none of the SIS questions is attempted, then the SIS raw score is missing.

Algorithm:

SISScore	Description
1-6	Count of "C" responses to SIS questions. SISScore=1 if only one response was correct, SISScore=2 if two responses were correct, etc.
0	If there are no "C" responses to SIS questions
NULL	If there are no attempted responses to SIS questions

Type: numeric

Related variable(s): sis3, sis4, sis5, sis6, sis7, sis8, sisattempt

A4.3 SISProratedScore (SIS prorated score (PPTs attempting 4+ items) = (# of correct SIS items * 6)/(# of attempted items))

Description: Prorated SIS score for PPTs who attempted 4 or more SIS items is given by the number of correct SIS items multiplied by 6 and divided by the total number of attempted SIS items.

Type: numeric

Algorithm:

SISProratedScore	Description
0-6	If a PPT attempts four or more SIS items then the prorated score is the number of correct items multiplied by 6 and divided by the total number of attempted items
NULL	If there are fewer than four attempted SIS items

Related variable(s): SISScore, SISAttempt

A4.4 SISFailure (SIS failure (prorated SIS score <= 3))

Description: Indicator variable for the failure of an SIS. SIS failure is defined as a prorated SIS score of three or less.

Type: numeric

Algorithm:

SISFailure	Description
1	If the SIS prorated score is non-missing and three or less, then the SIS was failed
0	If the SIS prorated score is greater than three, then the SIS was not failed
NULL	If the SIS prorated score is missing

Related variable(s): SISProratedScore

A5. SIS VARIABLES (ONE RECORD PER PPT)

A5.1 SISFAILURECAT (SIS FAILURE categories denoting number of failures)

Description: Since participants may have multiple SIS evaluations, SISFAILURECAT is a one-record-per-participant categorical variable that summarizes the number of SIS failures from the section above 'SIS Variables (multiple records per PPT)'. Categories denote the number of SIS Failures in order, where SISFailureCat=2 if there are at least two SIS failures per PPT, SISFailureCat=1 if there is only one SIS failure per PPT, SISFailureCat=0 if at least two SISs were not failed per PPT, and SISFailureCat=3 if any single SIS was not failed per PPT. If all SIS prorated scores are missing for a PPT, then SISFailureCat is also missing.

Type: numeric

Algorithm:

SISFailureCat	Description
2	2 or more SIS Failures
1	Any single SIS Failure
0	At least two SIS not failed
3	Any single SIS not failed
NULL	All SISFailure missing

Note: SISFAILURE1 indicates the first SIS evaluation for a participant, SISFAILURE2 indicates the second SIS evaluation, etc. These variables are the transposed SISFAILURE variable from the section 'SIS Variables (multiple records per PPT)'.

Related Variables(s): SISFAILURE1-SISFAILURE#

A5.2 SISFAILUREDATE (Date of first SIS failure or last observed not failed)

Description: Date variable that corresponds to the earliest date of SIS failure or the date of the last observed SIS that was not failed.

Type: Date

Algorithm:

SISFailureDate	Description
SIS0a	If SISFailureCat = 2, then it's the earliest SIS0a at which the second failure occurred

SIS0a	If SISFailureCat = 1, then it's the earliest SIS0a at which the first failure occurred
SIS0a	If SISFailureCat = 0, then it's the latest SIS0a between the last two not failed
SIS0a	If SISFailureCat = 3, then it's SIS0a corresponding to the not failed SIS
NULL	If SISFailureCat =NULL

Related Variable(s): SISFailureCat, SIS0a