Atherosclerosis Risk in Communities Study

Cohort Surveillance CHD Occurrences Data Dictionary

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Occurrence: An occurrence refers to a single hospitalization, fatal or non-fatal, or an out-of-hospital death with a unique ID.

Occurrence	**Forms (not all may be in the database)**	**Comment**
Non-fatal Hospitalization	HRA, SXI, ECG forms and CEL (if surveillance eligible cohort)	A unique ID will be assigned to all related forms
Fatal Hospitalization	HRA, SXI, ECG forms, DTH, and CEL (if surveillance eligible cohort)	A unique ID will be assigned to all related forms. Fatal hospitalizations include all non-fatal hospitalized materials in addition to death related forms.
Out of Hospital Death	HRA (if ER/DOA or no Vital sign death), SXI, DTH, PHQ (up to two), IFI (up to three), COR and CEL (if surveillance eligible cohort)	A unique ID will be assigned to all related forms.

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1. Classification Variables

1.1. CARCDXX

Purpose

To determine a MI Diagnosis for hospitalized occurrences among cohort participants.

Description

CARCDXX is a character variable determined by the adjudicated values of ECG, cardiac pain, and enzymes.

Type

Occurrence

Algorithm

CARCDXX	Description
'5'	Definite MI
'4'	Probable MI
'3'	Suspect MI
'2'	No MI
'1'	No MI
' '	missing pain, ECG and/or enzyme diagnosis

Related Variables

CPAINDX, CECGDXX, CENZDX

1.2. CARCDXX2

Purpose

To determine a MI diagnosis for hospitalized occurrences among cohort participants using downgraded pain and enzyme diagnosis.

Description

CARCDXX2 is a character variable determined by the adjudicated value of ECG (CECGDXX), downgraded cardiac pain (CPAINDX2) and downgraded enzymes (CENZDX2).

Type

Occurrence

Algorithm

CARCDXX2	Description
'5'	Definite MI
'4'	Probable MI
'3'	SUSPECT MI
'2'	No MI
'1'	No MI
' '	missing downgraded pain, enzyme or missing ECG diagnosis

Related Variables

CPAINDX2 (downgraded pain dx), CECGDXX, CENZDX2 (downgraded enzyme dx)

1.3. CECGDXX

Purpose

To determine an ECG diagnosis for hospitalized occurrences among cohort participants.

Description

CECGDXX is a character variable determined by adjudicated Cohort ECG values. CECGDXX takes values according to Section 4.2.6 of Manual 3. CECGDXX is set to missing (‘ ‘) for occurrences where no ECG’s are expected.

1= Absent, Uncodable or other
2= Equivocal
3= Evolving ST-T Pattern
4= Diagnostic ECG Pattern
5= Evolving Diagnostic

Type

Occurrence

Algorithm

If the Adjudicated CECGDX is not missing, then CECGDXX is CECGXADJ. Otherwise, CECGDXX is CECGDX.

SAS Code

```
if cecgxadj ne ' ' then cecgdxx=cecgxadj;
else cecgdxx=cecgdx;
```

Related Variables

ENZDX, CARCDX, CECGXADJ, CECGDX

1.4. CENZDX

Purpose

To determine an enzyme diagnosis for hospitalized occurrences among cohort participants before downgrading.

Description

CENZDX is a character variable determined by selected variables in the HRAA form. See Section 4.2.7 of Manual 3 (Surveillance Component Procedures, version 4.0) for details.

Type

Occurrence

Algorithm

CENZDX	Description
'4'	Abnormal
'3'	Equivocal
'2'	Incomplete
'1'	Normal
' '	OTHERWISE (OUT-OF-HOSPITAL DEATHS OR HRAA FORMS THAT SKIP OUT PRIOR TO ANSWERING HRAA23 OR MISSING HRAA FORMS)

Related Variables

ENZDX, CARCDX

1.5. CENZDX2

Purpose

To determine an Enzyme diagnosis for hospitalized occurrences among cohort participants that have been downgraded.

Description

CENZDX2 is a character variable determined by CENZDX and downgrading criteria. Downgrading (only for occurrences with CENZDX=4) was done by a Special Reviewer to re-classify ("downgrade") the enzyme diagnosis if certain criteria met. Later in study downgrading was evaluated by computer algorithm.

Type

Occurrence

Remarks

CENZDX2 equals CENZDX for all occurrences that did not meet the criteria for downgrading.

Algorithm

CENZDX2	Description
'4'	Abnormal
'3'	Equivocal
'2'	Incomplete
'1'	Normal
' '	OTHERWISE (OUT-OF-HOSPITAL DEATHS OR HRAA FORMS THAT SKIP OUT PRIOR TO ANSWERING HRAA23 OR MISSING HRAA FORMS)

SAS Code

```
if (cenzdx='4' & cenzstat=2 & '3'<=caricdx<='5') then do;
      if c_chd then badcenz=1;
      cenzdx2='3';
   end;
   else cenzdx2=cenzdx;
```

Related Variables

CENZDX

1.6. CPAINDX

Purpose

To determine a diagnosis for cardiac pain for hospitalized occurrences among cohort participants.

Description

CPAINDX is a character variable determined by HRAA25a. HRAA25a records the response to the following "Was there acute episodes of pain or discomfort anywhere in the chest, left arm or jaw, either within 72 hrs prior to arrival to this hospital or in conjunction with the in-hospital CHD event defined in 24b"? CPAINDX=1 if pain is absent, =2 if present.

Type

Occurrence

Algorithm

CPAINDX	HRAA25a	Description
'1'	N, U	Pain is absent
'2'	Y	Pain is present
' '		If HRAAFLG ≠ 'Y' or PARTHRA in {1 2 3 4 5 .I} (HRAA form not present or a skip out)

Related Variables

HRAAFLG, CPAINDX2

1.7. CPAINDX2

Purpose

To determine a diagnosis for cardiac pain for occurrences among cohort participants that have been reviewed for possible downgrading.

Description

CPAINDX2 is the possibly downgraded values of CPAINDX. Downgrading was done only for occurrences that have cardiac pain present but of possibly non-cardiac origin, which was done by a Special Reviewer who may re-classify ("downgrade") the cardiac pain to absent. Later in study downgrading was evaluated by computer algorithm.

Type

Occurrence

Algorithm

CPAINDX2	HRAA25a	HRAA25d	Description
'1'	N, U	Skipped	Pain is absent
'1'	Y	Y	Pain is present and Special Reviewer/computer algorithm determined to be of non-cardiac origin (Downgraded)
'2'	Y	Y	Pain is present and Special Reviewer determined to be of cardiac origin (Not Downgraded)
'2'	Y	N/U	Pain is present and possibly of cardiac origin (NOT DOWNGRADED)
' '			If HRAAFLG ≠ 'Y' or PARTHRA in {1 2 3 4 5 .I} (HRAA FORM NOT PRESENT OR A SKIP OUT)

SAS Code

```
if (cpainsta=2 & cpaindx='2') then do;
   if c_chd then badcpain=1;
   cpaindx2='1';
end;
else cpaindx2=cpaindx;
```

Related Variables

1.8 EVTYPE01

Purpose

To determine the event type classification of individual occurrences in our database.

Type

Occurrence

Description

EVTYPE01 is a character variable determined by the responses to the following selected HRAA DTHA, SXIA and CELB (if cohort) form items as follows:

Form	**Item**
DTHA:	DTHA12, DTHA13
HRAA:	HRAA17 HRAA19a HRAA19b HRAA19d
SXIA:	SXIA03
CELB:	CELB06 CELB12

Remarks

If the form items disagree as to the event type classification then the discrepancy is identified and sent to the FC for investigation. If the discrepancy remains irresolvable then SXIA03 is used as the arbitrator and as the source of the variable EVTYPE01.
4.6An ER/DOA or a no vital sign death is treated as an Out-of-hospital death (EVTYPE01='O') regardless of the presence of a HRAA form

Algorithm

```
if EVTYPE1=' ' & EVTYPE2=' ' & EVTYPE3=' ' & SXIA03 ne ' '
     then EVTYPE01=SXIA03;
else if EVTYPE2 ne ' ' then
     EVTYPE01=EVTYPE2;
else if EVTYPE3='I' | EVTYPE3='N' then
     EVTYPE01=EVTYPE3;
else if EVTYPE1='O' | EVTYPE1='I' then
     EVTYPE01=EVTYPE1;
else if EVTYPE1='D' | EVTYPE3='D' then do;
     if SXIA03='I' | SXIA03='O' then
               EVTYPE01=SXIA03;
     else if (IFI1FLAG | PHQ1FLAG | CORAFLAG | CELB07='Y')
               then EVTYPE01='O';
     else EVTYPE01='I';
end;
```

Related Variables
DTHAFLG, HRAAFLG, SXIAFLG, CELBFLG

CPAINDX, CARCDXX2

2 Identification Variables

2.1 CENTER

Purpose

To identify the field center from which a participant for a given occurrence originates.

Type

Occurrence

Description

CENTER is a character variable.

2.2 ID

Purpose

All events are assigned a surveillance ID number to uniquely identify each event in surveillance processing.

Type

Occurrence

Description

A unique surveillance event ID is assigned to each event.

2.3 CHRT_ID

Purpose

To map a surveillance ID to the Cohort participant ID.

Type

Occurrence

Description

CHRT_ID is the cohort participant ID assigned at exam visit 1. CHRT_ID is the same for all occurrences within a person, and is missing for occurrences not from cohort participants.

Related Variables

EVT_ID2, C_EVTID, ID

2.4 C_EVTID

Purpose

To determine an event ID for Cohort Surveillance.

Type

Occurrence

Description

C_EVTID is the ID from the most recent occurrence within an event. C_EVTID is the same for all occurrences within an event. If an event contains only one ID, then C_EVTID=ID.

Related Variables

C_LINK, EVENT_ID

2.5 EVT_ID2

Purpose

To determine an event ID for Cohort Surveillance

Type

Occurrence

Description

EVT_ID2 is the ID of the latest Occurrence of a person.

2.6 TEACHING

Purpose

To determine an event hospital's teaching status

Type

Occurrence

Description

TEACHING is the teaching status of the hospital.

Algorithm

See the algorithm under HRAA01A (hospital codes) for details.

Related Variables

HRAA01A

3 Sampling/Eligibility Variables

3.1 C_CHD

Purpose

To determine whether a cohort hospitalization is CHD eligible

Type

Occurrence

Description

C_CHD determines whether a cohort hospitalization is CHD eligible by looking at CEL form (questions 11a, 11d, 14a, and 8b) and seeing if the ICD – 10 code corresponds to a CHD occurrence.

Algorithm

C_CHD	Description
1	CELB11A='Y' or CELB11D='Y' or CEL14A contains a valid death code
0	if not above, and if (CELB08B='N' and no HRAA form) OR CEL14A does not have a valid death code OR {CELB11A='N' & [CELB11D='N' or (CEL11B='N' & CELB11C='N' & CELB11D □ 'Y')]}
.U	otherwise

SAS Code

```
if (celb11a='Y' & celbs11a in('A','C')) | (celb11d='Y' & celbs11d in('A','C')) | CELB15A='Y' /* Added
according to UC5180, by uccjjw after the UC5302 rerun */
        | goodc14 then c_chd=1;

    /* Change made for UC4883, JJW, 12/14/2007, Take CEL form version into consideration  */
    else if (celb08b='N' & not(hraaflg='Y')) | goodc14=0 | ( celb11a='N' &
        (celb11d='N' | (celb11b='N' & celb11c='N' & celb11d ne 'Y')) )  and celver in ('B', 'C', 'D')
        then c_chd=0;

    else if (celb08b='N' & not(hraaflg='Y')) | goodc14=0 | ( celb11a='N' &
        (celb11d='N' | (celb11b='N' & celb11d ne 'Y')) ) and celver >= 'E'
        then c_chd=0;
```

3.2 I_410

Purpose

To identify code eligible Surveillance HRAA forms with a 410 code recorded in HRAA02 (or HRAA15). Note that this variable has a value of 1 if the discharge code is 410 even if there is also a 411 or 412-414. To get disjoint categories in priority order, see the variables in the events file/dictionary.

Type

Occurrence

Description

I_410 is a numeric variable determined by the responses to the Hospital Record Abstraction form (HRA) version A items 2a through 2z (or items 15a through 15z). HRAA02 records the ICD9-CM diagnosis codes from the hospital discharge index or Eligibility Form. HRAA15 records the ICD9-CM diagnosis codes from the hospital medical record.

Remarks

If the hospitalization is eligible using HRAA02 responses then HRAA15 is not considered.

Algorithm

I_410 **Algorithm** (based on COL 5 in the table below)

1 If ONE of the responses on the selected HRAA item (02 or 15) identified in COL5 below have integer value = 410

0 If none of the responses on the selected HRAA item (HRAA02 or HRAA15) identified in column 5 below have integer value = 410 but have other eligible codes

. Otherwise

HRAA02		HRAA15		COL (5) HRAA variable used in the algorithm
Code eligible	Code and sampling date eligible	Code eligible	Code and sampling date eligible	
Y	NA	any	NA	HRAA02
N	NA	Y	NA	HRAA15
N	NA	N	NA	Not used (I_410 =.)

NA= Not applicable Related VariablesH02_MISS H15_MISS HRAAFLG I_411 I_412_14 I_OTHERS

3.3 I_411

Purpose

To identify code eligible Surveillance HRAA forms with a 411 code recorded in HRAA02 (or HRAA15). Note that this variable has a value of 1 if the discharge code is 411 even if there is also a 410 or 412-414. To get disjoint categories in priority order, see the variables in the events file/dictionary.

Type

Occurrence

Description

I_411 is a numeric variable determined by the responses to the Hospital Record Abstraction form (HRA) version A items 2a through 2z (or items 15a through 15z). HRAA02 records the ICD9-CM diagnosis codes from the hospital Discharge index or Eligibility Form. HRAA15 records the ICD9-CM diagnosis codes from the hospital medical record.

Remarks

If the hospitalization is eligible using HRAA02 responses then HRAA15 is not considered.

Algorithm

I_411 **Algorithm** (based on COL 5 in the table below)

1 If an of the responses on the selected HRAA item (02 or 15) identified in COL 5 below have integer value = 411

0 If none of the responses on the selected HRAA item (HRAA02 or HRAA15) identified in column 5 below have integer value = 411 but have other eligible codes

. Otherwise

HRAA02		HRAA15		COL (5) HRAA variable used in the algorithm
Code eligible	Code and sampling date eligible	Code eligible	Code and sampling date eligible	
Y	Y	any	Any	HRAA02
Y	N	Y	Y	HRAA15
Y	N	Y	N	HRAA02
Y	N	N	N	HRAA02
N	N	Y	Y	HRAA15
N	N	Y	N	HRAA15
N	N	N	N	Not used (I_411 =.)

NA= Not applicable
Related Variables
H02_MISS H15_MISS HRAAFLG I_410 I_412_14 I_OTHERS

3.4 I_412_14

Purpose

To identify code eligible Surveillance HRAA forms with a 412_14 code recorded in HRAA02 (or HRAA15). Note that this variable has a value of 1 if the discharge code is 412-414 even if there is also a 410 or 411. To get disjoint categories in priority order, see the variables in the events file/dictionary.

Type

Occurrence

Description

I_412_14 is a numeric variable determined by the responses to the Hospital Record Abstraction form (HRA) version A items 2a through 2z (or items 15a through 15z). HRAA02 records the ICD9-CM diagnosis codes from the hospital Discharge index or Eligibility Form. HRAA15 records the ICD9-CM diagnosis codes from the hospital medical record.

Remarks

If the hospitalization is eligible using HRAA02 responses then HRAA15 is not considered.

Algorithm

I_412_14 Algorithm (based on COL 5 in the table below)

1 If an of the responses on the selected HRAA item (02 or 15) identified in COL 5 below have integer value = 412_14

0 If none of the responses on the selected HRAA item (HRAA02 or HRAA15) identified in column 5 below have integer value = 412_14 but have other eligible codes

. Otherwise

HRAA02		HRAA15		COL (5) HRAA variable used in the algorithm
Code eligible	Code and sampling date eligible	Code eligible	Code and sampling date eligible	
Y	Y	any	Any	HRAA02
Y	N	Y	Y	HRAA15
Y	N	Y	N	HRAA02
Y	N	N	N	HRAA02
N	N	Y	Y	HRAA15
N	N	Y	N	HRAA15
N	N	N	N	Not used (I_412_14 = .)

NA= Not applicable
Related VariablesH02_MISS H15_MISS HRAAFLG I_410 I_411 I_OTHERS

3.5 I_C410

Purpose

To identify code eligible cohort CELB forms with a 410 code in CELB10. Note that this variable has a value of 1 if the discharge code is 410 even if there is also a 411 or 412-414. To get disjoint categories in priority order, see the variables in the events file/dictionary.

Type

Occurrence

Description

I_C410 is a numeric variable determined by the response to the Cohort Event Eligibility Form (CEL) items 10a through 10z. CELB10 records the hospital discharge diagnosis and procedure codes.

Algorithm

I_C410=1	if any response on CELB10a-z has integer value = 410
I_C410=0	otherwise

3.6 I_C411

Purpose

To identify code eligible cohort CELB forms with a 411 code in CELB10. Note that this variable has a value of 1 if the discharge code is 411 even if there is also a 410 or 412-414. To get disjoint categories in priority order, see the variables in the events file/dictionary.

Type

Occurrence

Description

I_C411 is a numeric variable determined by the response to the Cohort Event Eligibility Form (CEL) items 10a through 10z. CELB10 records the hospital discharge diagnosis and procedure codes.

Algorithm

I_C411=1	if any response on CELB10a-z has integer value = 411
I_C411=0	otherwise

3.7 I_C412_4

Purpose

To identify code eligible cohort CELB forms with a 412_4 code in CELB10. Note that this variable has a value of 1 if the discharge code is 412-414 even if there is also a 410 or 411. To get disjoint categories in priority order, see the variables in the events file/dictionary.

Type

Occurrence

Description

I_C412_4 is a numeric variable determined by the response to the Cohort Event Eligibility Form (CEL) items 10a through 10z. CELB10 records the hospital discharge diagnosis and procedure codes.

Algorithm

I_C412_4=1	if any response on CELB10a-z has integer value = 412_4
I_C412_4=0	otherwise

3.8 I_COTHER

Purpose

To identify code eligible cohort CELB forms with a 402, 427, 428, OR 518.4 code in CELB10. Note that this variable has a value of 1 if the discharge code is 402, 427, 428, OR 518.4, even if there is also a 410 or 411 or 412-414. To get disjoint categories in priority order, see the variables in the events file/dictionary.

Type

Occurrence

Description

I_COTHER is a numeric variable determined by the response to the Cohort Event Eligibility Form (CEL) items 10a through 10z. CELB10 records the hospital discharge diagnosis and procedure codes.

Algorithm

I_COTHER=1 if any response on CELB10a-z has integer value = 402, 427, 428 or = 518.4

I_COTHER=0 otherwise

3.9 I_OTHERS

Purpose

To identify code eligible Surveillance HRAA forms with a 402 427 428 or 518.4 code recorded in HRAA02 (or HRAA15). Note that this variable has a value of 1 if the discharge code is 402, 427, 428, OR 518.4, even if there is also a 410 or 411 or 412-414. To get disjoint categories in priority order, see the variables in the events file/dictionary.

Type

Occurrence

Description

I_OTHERS is a numeric variable determined by the responses to the Hospital Record Abstraction form (HRA) version A items 2a through 2z (or items 15a through 15z). HRAA02 records the ICD9-CM diagnosis codes from the hospital Discharge index or Eligibility Form. HRAA15 records the ICD9-CM diagnosis codes from the hospital medical record.

Remarks

If the hospitalization is eligible using HRAA02 responses then HRAA15 is not considered.

Algorithm

I_OTHERS Algorithm (based on COL 5 in the table below)

1 If an of the responses on the selected HRAA item (02 or 15) identified in COL 5 below have integer value = 402, 427, 428 or = 518.4

0 If none of the responses on the selected HRAA item (HRAA02 or HRAA15) identified in column 5 below have integer value = 402, 427, 428 or equal to 518.4 but have other eligible codes

. Otherwise

HRAA02		HRAA15		COL (5) HRAA variable used in the algorithm
Code eligible	Code and sampling date eligible	Code eligible	Code and sampling date eligible	
Y	Y	any	Any	HRAA02
Y	N	Y	Y	HRAA15
Y	N	Y	N	HRAA02
Y	N	N	N	HRAA02
N	N	Y	Y	HRAA15
N	N	Y	N	HRAA15
N	N	N	N	Not used (I_OTHERS = .)

NA= Not applicable
Related VariablesH02_MISS H15_MISS HRAAFLG I_410 I_411 I_412-14

4 Event Date Variables

4.1 DDATE_FollowUpDays

Purpose

To determine a death date for a death occurrence or a discharge date for each non-fatal hospitalization.

Type

Occurrence

Description

Remarks

If a date of death/discharge is not available, DDATE takes the value of first ECG date if available.

Algorithm

```
array dates{0:7} dtha09 hraa14 celb04 sxiad cora01 seca03
                 cead02 cebd02;

do i=0 to 7 until(dates{i}>.Z);
      if dates{i}>.Z then do;
         ddate=dates{i};
         dyear=year(ddate);
      end;
 end;
```

DDATE assumes one of the following non-missing dates in the listing order: DTH09, HRAA14, CELB04, SXIA04, SXIA03b, CORA01, SECA03, CEAD02, CEBD02. If all the nine dates listed above are missing, then DDATE takes missing value.

Related Variables

DDATE0, V1DATE01

4.2 DDATE_Year

Purpose

To determine year of death date for a death occurrence or a discharge date for each non-fatal hospitalization.

4.3 DDATE0_FollowUpDays

Purpose

To determine the follow-up time in days since visit 1 and an earliest recorded date for all occurrences.

Type

Occurrence

Description

DDATE0 describes the earliest recorded date or all the occurrences, as determined by HRA form. If the information is not in there, then DDATE0 takes on the value of DDATE (obtained by forms DTH, HRAA, CEL, SXI, COR, SEC, CEA, and CEB).

Algorithm

```
if hraa11a>.z then ddate0=hraa11a;
   else if sxia03='N' then do;
      if sxia04>.z then ddate0=sxia04;
      else if sxia04m ne ' ' & sxia04y ne ' ' then do;
        ddate0= input(trim(left(sxia04m))||'01'||trim(left(sxia04y)),mmddyy8.);
      end;
   end;
else ddate0=ddate;
```

DDATE0 takes the value of HRAA11A if it is not missing. If HRAA11A is missing then DDATE0 takes the value of DDATE.

Remarks

DDATE0 takes the value of date of arrival (DOA), or date of death/discharge if DOA is not available, or date of the first ECG recorded if none of above dates is present.

Related Variables

DDATE, V1DATE01

4.4 DDATE0_Year

Purpose

To determine the year of earliest recorded date for all occurrences.

4.5 DTHDATE_FollowUpDays

Purpose

To determine the follow-up time in days since visit 1 and a death date for fatal occurrences.

Type

Occurrence

Description

DTHDATE will assume one of the following dates: DTH09, HRAA14, CELB04, or DDATE as indicated on the table below if the person is deceased. DTH09 records the date of death from the death Certificate, HRAA14 records the date of discharge or death from the hospital medical record, CELB04 records the date of death or discharge looking at a series of forms, and CELB06 asks if it is a death. Non-fatal occurrences have DTHDATE = .N. If EVTYPE01 cannot be determined, DTHDATE=.U

Algorithm

DTHDATE	Description
DTH09	If (EVTYPE01='I' or 'O') and DTH09 is non-missing
HRAA14	If (EVTYPE01='I' or 'O') and DTH09 is missing and (HRAA17=D and HRAA14 is not missing)
CELB04	IF (EVTYPE01='I' OR 'O') AND DTH09 AND HRAA14 ARE BOTH MISSING AND CELB04 IS NOT MISSING AND CELB06 = 'Y'
DDATE	If (EVTYPE01='I' or 'O') and (DTH09, HRAA14, and CELB04 are all missing)
.N	If EVTYPE01 = 'N' **(Non-Fatal occurrence)**
.U	Otherwise

Remarks

DTHDATE may contain non-validated death dates obtained from information other than the death certificates. To use only validated death date, DTH09 is the variable to use.

Related Variables

EVTYPE01, DDATE, V1DATE01

4.6 DTHDATE_Year

Purpose

To determine the fyear of a death date for fatal occurrences.

4.7 HSPDATE_FollowUpDays

Purpose

To determine the follow-up time in days since visit 1 and a date for each hospitalization. HSPDATE is used to determine linkage among multiple occurrences as well as MIDATE algorithm.

Type

Occurrence

Description

Algorithm

The HSPDATE algorithm may be summarized as follows.

Onset **before** arrival (HRAA23a)	Onset **after** arrival (HRAA24b)	HSPDATE (in order as listed below)
Any	N	HRAA11a, HRAA44a
Y	Y	HRAA44a, HRAA11a, HRAA24c
not Y	Y	HRAA24c, HRAA44a, HRAA11a

If DOA/ER, no vital sign death or no MI occurrences, then HSPDATE=HRAA11a.

If no HRAA form, or Chart not found, then HSPDATE=missing.

Remarks

HSPDATE assumes one of the following dates: HRAA11a, HRAA24c or HRAA44a as indicated below.

4.8 HSPDATE_Year

Purpose

To determine the year of a date for each hospitalization. HSPDATE is used to determine linkage among multiple occurrences as well as MIDATE algorithm.

5 Linkage Variables

5.1 C_LINK

Purpose

To determine if multiple eligible occurrences for a single person are linked "within 28 days" using hospitalization date or death date.

Description

Occurrences that are "linked" (C_LINK=1) are considered an event and have the same cohort event ID (C_EVTID).

Type

Occurrence

Algorithm

SAS Code

```
c_link=not(first.c_evtid & last.c_evtid);
```

Remarks

C_LINK (for cohort surveillance) is an analogy to LINK (for community surveillance). Please refer to LINK for details.

Algorithm

Number of Occurrence(s)	C_LINK	ALGORITHM
ONE	0	C_LINK = 0 for individual occurrence
TWO	1	If the difference between the two hospital dates is < 29 days **(C_LINK=1 for Both Occurrences)**
	0	If the difference between the two hospital dates is ≥ 29 days **(C_LINK=0 for Both Occurrences)**
More than TWO	1	If the difference between the first and the last hospital date is < 29 days **(C_LINK=1 for <u>All</u> occurrences)**
	1 or 0	If each pair of occurrences has hospital dates ≤ 28 days of each other, but the difference between the first and last hospital dates is > 28 days then **Special Reviewer assigns C_LINK to all the occurrences**

Related Variables

LINK, C_EVTID