

Cardiac Arrest

Date

May 27, 2025 (updated to ignore eSituation.10 - Other Associated Symptoms if it has a Pertinent Negative, "Symptom Not Present")

April 28, 2022 (corrected SAS code)

August 26, 2021

Definition

The patient experienced a cardiac arrest with presumed cardiac etiology.

Criteria Description

Patient care reports where:

- any symptom or impression is cardiac arrest
and
 - cardiac arrest occurred prior to EMS arrival and the etiology is presumed cardiac or blank
 - or
 - cardiac arrest occurred after EMS arrival and the etiology is presumed cardiac.

Pseudocode

Patient care reports where:

eSituation.09 - Primary Symptom

eSituation.10 - Other Associated Symptoms (without Pertinent Negative)

eSituation.11 - Provider's Primary Impression

eSituation.12 - Provider's Secondary Impressions

- I46* Cardiac Arrest

AND

(

(

eArrest.01 Cardiac Arrest

- Yes, Prior to EMS Arrival

AND

eArrest.02 - Cardiac Arrest Etiology

- Cardiac (Presumed)
- [Blank]

)

OR

(

eArrest.01 - Cardiac Arrest:

- Yes, After EMS Arrival

AND

eArrest.02 - Cardiac Arrest Etiology

- Cardiac (Presumed)

)

)

XPath Code

```
/EMSDataset/Header/PatientCareReport
[
  eSituation/(eSituation.09, eSituation.10[not(@PN)], eSituation.11, eSituation.12)
  [starts-with(., 'I46')]
  and
  (
    (
      eArrest/eArrest.01 = '3001003'
      and
      eArrest/eArrest.02 = ('3002001', '')
    )
    or
    (
      eArrest/eArrest.01 = '3001005'
      and
      eArrest/eArrest.02 = '3002001'
    )
  )
]
```

SAS Code

The NEMESIS public release research dataset does not include the Pertinent Negative attribute on eSituation.10 - Other Associated Symptoms, which was added in NEMESIS version 3.5, so the SAS code will select some records where a symptom was actually documented as “Symptom Not Present.” This is estimated to affect less than 3% of v3.5 records.

```
proc sql;
  create table CardiacArrestKey as
```

```

select distinct pcrKey from
(
(
select pcrKey from nemsis.factPcrPrimarySymptom
  where substr(eSituation_09,1,3) = 'I46'
union
select pcrKey from nemsis.factPcrAdditionalSymptom
  where substr(eSituation_10,1,3) = 'I46'
union
select pcrKey from nemsis.factPcrPrimaryImpression
  where substr(eSituation_11,1,3) = 'I46'
union
select pcrKey from nemsis.factPcrSecondaryImpression
  where substr(eSituation_12,1,3) = 'I46'
)
intersect
(
select pcrKey from nemsis.pub_pcrEvents
  where eArrest_01 = '3001003' and eArrest_02 in ('3002001', '')
union
select pcrKey from nemsis.pub_pcrEvents
  where eArrest_01 = '3001005' and eArrest_02 = '3002001'
)
)
;
quit;

```

Discussion

The following ICD-10-CM impression and symptom codes were considered for use but not chosen because they select very few additional records:

- I97.12* Postprocedural cardiac arrest
- I97.71* Intraoperative cardiac arrest
- P29.81 Cardiac arrest of newborn
- O03.36 Cardiac arrest following incomplete spontaneous abortion
- O03.86 Cardiac arrest following complete or unspecified spontaneous abortion
- O07.36 Cardiac arrest following failed attempted termination of pregnancy
- O08.81 Cardiac arrest following an ectopic and molar pregnancy
- O29.11* Cardiac arrest due to anesthesia during pregnancy

The following elements were considered for use but not chosen because, for this case definition, it is important to determine whether the cardiac arrest was due to a cardiac etiology:

- eArrest.04 - Arrest Witnessed By
- eArrest.11 - First Monitored Arrest Rhythm of the Patient
- eArrest.14 - Date/Time of Cardiac Arrest
- eVitals.03 - Cardiac Rhythm / Electrocardiography (ECG)
- eProcedures.03 – Procedure: Cardiac resuscitation procedures
- eDisposition.24 - Destination Team Pre-Arrival Alert or Activation: Yes-Cardiac Arrest

This case definition differs from the [Cardiac Arrest Registry to Enhance Survival \(CARES\)](#). The purpose of this case definition is to identify all cardiac arrests with cardiac etiology. The purpose of CARES is to evaluate the effectiveness of EMS response to cardiac arrests with cardiac etiology *where resuscitation was attempted*. CARES includes the following additional criteria to further limit the record selection:

- Resuscitation is attempted by a 911 responder (CPR and/or defibrillation)
or
- The patient received an AED shock by a bystander prior to the arrival of 911 responders

References

Chan HK, Okubo M, Callaway CW, Mann NC, Wang HE. Characteristics of adult out-of-hospital cardiac arrest in the National Emergency Medical Services Information System. *JACEP Open*. 2020. p 1–8. doi.org/10.1002/emp2.12106.

EMS User Guide: Cardiac Arrest Registry to Enhance Survival (CARES). 2019. p 4. mycares.net/sitepages/uploads/2022/EMS%20User%20Guide.pdf.