

# Cardiac Arrest

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## Date

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  
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, 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

```

proc sql;
create table CardiacArrestKey as
select distinct pcrKey from
(
  (
    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'
union
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'
)
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](https://doi.org/10.1002/emp2.12106).

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