NEMSIS V3 Case Definition

Patient Death

Date

June 27, 2023

Definition

The patient died during the EMS call.

Criteria Description

Patient care reports where (any of the following):

- MCI patient triage classification is black - deceased
- An impression or symptom is Ill-defined and unknown cause of mortality
- Initial patient acuity is dead without resuscitation efforts (black)
- Resuscitation was not attempted because it was considered futile or due to do-not-resuscitate orders
- Return of spontaneous circulation did not occur
- CPR/resuscitation was discontinued because of obvious signs of death or due to do-not-resuscitate orders
- Cardiac rhythm on arrival at destination is non-perfusing (agonal/idioventricular, asystole, PEA, ventricular fibrillation, or pulseless ventricular tachycardia)
- The end of the EMS cardiac arrest event is that the patient expired in the field
- Incident/patient disposition (prior to NEMSIS 3.5) is patient dead at scene…
- Final patient acuity is dead…
- Type of destination is morgue/mortuary

Pseudocode

Patient care reports where:

eScene.08 - Triage Classification for MCI Patient
- Black – Deceased

OR
eSituation.09 - Primary Symptom
eSituation.10 - Other Associated Symptoms

eSituation.11 - Provider's Primary Impression
eSituation.12 - Provider's Secondary Impressions
- R99 Ill-defined and unknown cause of mortality

OR

eSituation.13 - Initial Patient Acuity
- Dead Without Resuscitation Efforts (Black)

OR

eArrest.03 - Resuscitation Attempted by EMS
- Not Attempted-Considered Futile
- Not Attempted-DNR Orders

OR

eArrest.12 - Any Return of Spontaneous Circulation
- No

OR

eArrest.16 - Reason CPR/Resuscitation Discontinued
- DNR
- Obvious Signs of Death

OR

eArrest.17 Cardiac Rhythm on Arrival at Destination
- Agonal/Idioventricular
- Asystole
- PEA
- Ventricular Fibrillation
- Ventricular Tachycardia (Pulseless)

OR

eArrest.18 - End of EMS Cardiac Arrest Event
- Expired in the Field

OR

eDisposition.12 - Incident/Patient Disposition (prior to NEMSIS 3.5)
- Patient Dead at Scene…

OR

eDisposition.19 - Final Patient Acuity
- Dead…

OR

eDisposition.21 Type of Destination
- Morgue/Mortuary

XPath Code

```
/EMSDataSet/Header/PatientCareReport
  [
    eScene/eScene.08 = '2708009'
    or
    eSituation/(eSituation.09, eSituation.10, eSituation.11, eSituation.12) = 'R99'
    or
```

```
eSituation/eSituation.13 =  '2813007'
or
eArrest/eArrest.03 = ('3003007', '3003009')
or
eArrest/eArrest.12 = '3012001'
or
eArrest/eArrest.16 = ('3016001', '3016005')
or
eArrest/eArrest.17 = ('9901001', '9901003', '9901035', '9901067', '9901071')
or
eArrest/eArrest.18 = '3018003'
or
eDisposition/eDisposition.12 =  ('4212013', '4212015', '4212017', '4212019')
or
eDisposition/eDisposition.19 = ('4219007', '4219009')
or
eDisposition/eDisposition.21 = '4221009'
]
```

SAS Code

```
proc sql;
  create table PatientDeathKey as
  select distinct pcrKey from
    (
      select pcrKey from nemsis.pub_pcrEvents
        where eScene_08 = '2708009'
        or eSituation_13 = '2813007'
        or eDisposition_12 in ('4212013', '4212015', '4212017', '4212019')
        or eDisposition_19 in ('4219007', '4219009')
        or eDisposition_21 = '4221009'
        or eArrest_18 = '3018003'
        or eArrest_16 in ('3016001', '3016005')
      union
      select pcrKey from nemsis.factPcrArrestResuscitation
        where eArrest_03 in ('3003007', '3003009')
      union
      select pcrKey from nemsis.FactPcrArrestRosc where eArrest_12 = '3012001'
      union
      select pcrKey from nemsis.factPcrArrestRhythmDestination
        where eArrest_17 = ('9901001', '9901003', '9901035', '9901067', '9901071')
      union
      select pcrKey from nemsis.factPcrPrimarySymptom where eSituation_09 = 'R99'
      union
```

```
    select pcrKey from nemsis.factPcrAdditionalSymptom where eSituation_10 = 'R99'
    union
    select pcrKey from nemsis.factPcrPrimaryImpression where eSituation_11 = 'R99'
    union
    select pcrKey from nemsis.factPcrSecondaryImpression where eSituation_12 = 'R99'
  )
  ;
quit;
```

Discussion

The following differences among NEMSIS versions affect this case definition:

- eDisposition.12 - Incident/Patient Disposition was retired in version 3.5.0. This case definition might tend to select a greater percentage of records in versions prior to 3.5.0 because of the eDisposition.12 criterion.
- eDisposition.19 - Final Patient Acuity
  - "Dead without Resuscitation Efforts (Black)" was added in version 3.4.0.
  - "Dead with Resuscitation Efforts (Black)" was added in version 3.5.0.

eDisposition.31 - Reason for Refusal/Release was added in version 3.5.0. It contains the values "DNR" and "Medical/Physician Orders for Life Sustaining Treatment," which could be added as criteria for this case definition. eExam.19 is not a national element. Its use in the criteria would cause a different set of records to be selected depending on whether or not it was collected and available in the data set, which would lead to local inconsistencies in the case selection. Also, the presence of DNR or POLST does not necessarily mean the patient died.

"Development of a Binary End-of-Event Outcome Indicator for the NEMSIS Public Release Research Dataset" mistakenly omitted the Incident/Patient Disposition criterion of *Patient Dead at Scene-Resuscitation Attempted (With Transport)*. This case definition also differs from the research article by including the symptom or impression criterion of *R99 Ill-defined and unknown cause of mortality* and the Final Patient Acuity criterion of *Dead with Resuscitation Efforts* (which was added in NEMSIS 3.5.0).

For some purposes it may be desirable to identify deaths that occurred without any opportunity for EMS to impact the outcome (for example, the patient was already dead when EMS arrived on scene). The following criteria are recommended for identifying this subset of patients:

- Initial patient acuity is dead without resuscitation efforts (black)
- Final patient acuity is dead without resuscitation efforts (black)
- Incident/patient disposition (prior to NEMSIS 3.5) is patient dead at scene-no resuscitation attempted…
- Resuscitation was not attempted because it was considered futile or due to do-not-resuscitate orders
- CPR/resuscitation was discontinued because of obvious signs of death or due to do-not-resuscitate orders

References

Miller M, Lincoln E, Brown L. (2021). Development of a Binary End-of-Event Outcome Indicator for the NEMSIS Public Release Research Dataset. *Prehospital Emergency Care.* 25:4, 504-511. doi.org/10.1080/10903127.2020.1794435.