NEMSIS V3 Case Definition

Stroke

Date

May 27, 2025 (updated to ignore eSituation.10 - Other Associated Symptoms if it has a Pertinent Negative, "Symptom Not Present"; updated name of eVitals.29 - Stroke Scale Result; added discussion of eVitals.34 - Stroke Scale Score)
August 26, 2021

Definition

The patient experienced a possible stroke.

Criteria Description

Patient care reports where:

- any symptom or impression is stroke
  or
- stroke scale result is positive
  or
- stroke protocol is used
  or
- a stroke destination team pre-arrival alert or activation is performed.

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
- G45* Transient cerebral ischemic attacks and related syndromes
- G46* Vascular syndromes of brain in cerebrovascular diseases
- I60* Nontraumatic subarachnoid hemorrhage
- I61* Nontraumatic intracerebral hemorrhage
- I63* Cerebral infarction

OR

eVitals.29 - Stroke Scale Result
- Positive

OR

eProtocols.01 Protocols Used
- Medical-Stroke/TIA

OR

eDisposition.24 - Destination Team Pre-Arrival Alert or Activation
- Yes-Stroke

XPath Code

```
/EMSDataSet/Header/PatientCareReport
  [
    eSituation/(eSituation.09, eSituation.10[not(@PN)], eSituation.11, eSituation.12)
      [matches(., '^(G45)|(G46)|(I60)|(I61)|(I63)')]
    or
    eVitals/eVitals.VitalGroup/eVitals.StrokeScaleGroup/eVitals.29 = '3329005'
    or
    eProtocols/eProtocols.ProtocolGroup/eProtocols.01 = '9914145'
    or
    eDisposition/eDisposition.HospitalTeamActivationGroup/eDisposition.24 = '4224015'
  ]
```

SAS Code

The NEMSIS public release research dataset does not include the Pertinent Negative attribute on eSituation.10 - Other Associated Symptoms, which was added in NEMSIS 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 StrokeKey as
  select distinct pcrKey from
    (
      select pcrKey from nemsis.factPcrPrimarySymptom where
        substr(eSituation_09,1,3) in ('G45', 'G46', 'I60', 'I61', 'I63')
      union
      select pcrKey from nemsis.factPcrAdditionalSymptom where
        substr(eSituation_10,1,3) in ('G45', 'G46', 'I60', 'I61', 'I63')
      union
      select pcrKey from nemsis.factPcrPrimaryImpression where
```

```
            substr(eSituation_11,1,3) in ('G45', 'G46', 'I60', 'I61', 'I63')
        union
        select pcrKey from nemsis.factPcrSecondaryImpression where
            substr(eSituation_12,1,3) in ('G45', 'G46', 'I60', 'I61', 'I63')
        union
        select pcrKey from nemsis.factPcrVital where eVitals_29 ='3329005'
        union
        select pcrKey from nemsis.factPcrProtocol where eProtocol_01 = '9914145'
        union
        select pcrKey from nemsis.factPcrDestinationTeam where eDisposition_24 =
            '4224015'
    )
  ;
quit;
```

Discussion

eVitals.34 - Stroke Scale Score (added in NEMSIS version 3.5.1) was not included because it is not a national element. Its use in the criteria would cause a different set of records to be selected depending on whether it was collected and available in the data set, which would lead to local inconsistencies in the case selection. It would need to be used in combination with eVitals.30 - Stroke Scale Type to determine which values would represent a high likelihood of a stroke.

eExam.20 - Neurological Assessment has several values that are indicative of a possible stroke. However, it was not included in the criteria for two reasons:

1. It is not possible to infer that the assessment finding was caused by a stroke, unless EMS made such a determination as indicated by the data in the elements that are included in the criteria.
2. eExam.20 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.

The NEMSQA definition for *Stroke-01 Suspected Stroke Receiving Prehospital Stroke Assessment* includes Impressions but not the other elements, partly because completion of Stroke Scale Score is the performance attribute being measured. The NEMSQA measure also limits to 911 calls and patients who are unresponsive or have a GCS of 9 or less, probably because of the intent of measuring the completion of Stroke Scale Score.

References

Stroke-01: Suspected Stroke Receiving Prehospital Stroke Assessment. National EMS Quality Alliance (NEMSQA). nemsqa.org/assets/docs/NEMSQA-Stroke-01_2021.pdf.