NEMSIS V3 Case Definition

Opioid Overdose

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 link to General Filters in Discussion)
August 26, 2021

Definition

The patient is experiencing a potential opioid overdose.

Criteria Description

Patient care reports where:

- any symptom or impression is opioid related disorders or poisoning by opioids (except subsequent encounter and sequela)
  or
    - naloxone is administered
      and
    - patient condition improves in response to naloxone.

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
- F11* Opioid related disorders
- T40.0X?[1-4]?A?$ Poisoning by opium
- T40.1X?[1-4]?A?$ Poisoning by heroin
- T40.2X?[1-4]?A?$ Poisoning by other opioids
- T40.3X?[1-4]?A?$ Poisoning by methadone
- T40.4.?[1-4]?A?$ Poisoning by synthetic narcotics
- T40.4X?[1-4]?A?$ Poisoning by synthetic narcotics

- T40.60?[1-4]?A?$ Poisoning by unspecified narcotics
- T40.69?[1-4]?A?$ Poisoning by other narcotics

OR

eMedications.Medication Group where:
- eMedications.03 - Medication Given is a code for naloxone (Narcan, etc.)
  AND
- eMedications.07 - Response to Medication is Improved

XPath Code

```
/EMSDataSet/Header/PatientCareReport
  [
    eSituation/(eSituation.09, eSituation.10[not(@PN)], eSituation.11, eSituation.12)
      [matches(., '^(F11.*)|(T40\.[0-3]X?[1-4]?A?)|(T40\.4.?[1-4]?A?)|
      (T40\.6[09]?[1-4]?A?)$')]
    or
    eMedications/eMedications.MedicationGroup
    [
      eMedications.03 = ('7242', '203192', '197117')
      and
      eMedications.07 = '9916001'
    ]
  ]
```

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 OpioidOverdoseKey as
  select distinct pcrKey from
    (
      select pcrKey from nemsis.factPcrPrimarySymptom where prxmatch(
        '/^(F11.*)|(T40\.[0-3]X?[1-4]?A?)|(T40\.4.?[1-4]?A?)|
        (T40\.6[09]?[1-4]?A?)$/', eSituation_09)
      union
      select pcrKey from nemsis.factPcrAdditionalSymptom where prxmatch(
        '/^(F11.*)|(T40\.[0-3]X?[1-4]?A?)|(T40\.4.?[1-4]?A?)|
        (T40\.6[09]?[1-4]?A?)$/', eSituation_10)
```

```
    union
    select pcrKey from nemsis.factPcrPrimaryImpression where prxmatch(
        '/^(F11.*)|(T40\.[0-3]X?[1-4]?A?)|(T40\.4.?[1-4]?A?)|
        (T40\.6[09]?[1-4]?A?)$/', eSituation_11)
    union
    select pcrKey from nemsis.factPcrSecondaryImpression where prxmatch(
        '/^(F11.*)|(T40\.[0-3]X?[1-4]?A?)|(T40\.4.?[1-4]?A?)|
        (T40\.6[09]?[1-4]?A?)$/', eSituation_12)
    union
    select pcrKey from nemsis.factPcrMedication where eMedications_03 in
        ('7242', '203192', '197117') and eMedications_07 = '9916001'
    )
  ;
quit;
```

Discussion

The use of eInjury.01 - Cause of Injury for the ICD-10-CM codes starting with "T40" (see list above) was considered, but it selects very few additional records (less than 0.1%).

In the October 2020 release of ICD-10-CM, the T40.4X series of codes was replaced by T40.4[129]. The case definition covers the retired and new codes.

This definition differs from the CSTE *Emergency Medical Services Nonfatal Opioid Overdose Case Definition* in these ways:

- The CSTE definition excludes records where eResponse.05 - Type of Service Requested indicates a non-emergent response or eResponse.13 – Initial Patient Acuity is "Dead Without Resuscitation Efforts (Black)". See General Filters for information about how to apply these additional criteria.
- The CSTE definition optionally includes eNarrative.01 - Patient Care Report Narrative. This definition does not, since the element is not a national element.
- The CSTE definition only includes billable ICD-10-CM codes. EMS often uses non-billable codes as well, so this definition includes more ICD-10-CM codes than the CSTE definition.

References

Emergency Medical Services Nonfatal Opioid Overdose Standard Guidance. Council of State and Territorial Epidemiologists (CSTE). cste.org/resource/resmgr/opioidsurv/EMS_Nonfatal_Opioid_Overdose.pdf.

Harris, D. R., Rock, P., Anthony, N., Quesinberry, D., & Delcher, C. (2025). Identification of Naloxone in Emergency Medical Services Data Substantially Improves by Processing Unstructured Patient Care Narratives. *Prehospital Emergency Care*, 1–10. https://doi.org/10.1080/10903127.2024.2446638

Nonfatal Opioid Overdose Standardized Surveillance Case Definition. Council of State and Territorial Epidemiologists. cste.org/resource/resmgr/2019ps/final/19-CC-01_final_7.31.19.pdf.

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Michigan Emergency Medical Services Case Definition of Drug-Involved Emergency. Michigan Department of Health and Human Services (MDHHS). michigan.gov/opioids/-/media/Project/Websites/opioids/documents/EMS-Drug-Involved-Definition---Web-Version_updated-3323.pdf.

Virginia Office of Emergency Medical Services Opioid Overdose Definition. Virginia Department of Health. vdh.virginia.gov/content/uploads/sites/23/2019/08/Virginia-Office-of-EMS-Opioid-Overdose-Definition.pdf.