



Montana EMS Dataset: Suspected Opioid Overdose Definition

Categorical syndrome definition as defined by the state of Montana, intended to detect EMS incidents involving a suspected opioid overdose.

Labeled as suspected opioid overdose if any of the following (5) Conditions are true:

1. Naloxone administration is documented (eMediations.03) and response to medication indicates patient improvement (eMedications.07)
2. Primary or secondary impression/symptom(s) indicate opioid overdose AND response to Naloxone is NOT worse:
 - Primary/secondary impression (eSituation.11, eSituation.12) OR primary/other symptom (eSituation.09/eSituation.10) is an opioid overdose code
 - Any of the following are true:
 - No naloxone administration is documented.
 - Naloxone administration is documented and response to medication is missing
 - Naloxone administration is documented and response to medication is improved or unchanged
3. Primary or secondary impression/symptom(s) indicate non-specific drug overdose AND opioid term is mentioned in narrative AND response to Naloxone is NOT worse AND there are no narcotic medications listed under administered medications:
 - Primary/secondary impression (eSituation.11, eSituation.12) OR primary/other symptom (eSituation.09/eSituation.10) is a non-specific overdose code
 - Narrative (eNarrative.01) or complaint (eSituation.04) contains an opioid term:
 - Any of the following are true:
 - No naloxone administration is documented.
 - Naloxone administration is documented and response to medication is missing
 - Naloxone administration is documented and response to medication is improved or unchanged
 - No narcotic medications listed under administered medications (eMedications.03).
4. Primary or secondary impression/symptom(s) indicate non-specific drug or opioid overdose, cardiac arrest, apnea, or respiratory failure AND opioid term is mentioned in narrative AND naloxone is an administered medication AND patient fatality is indicated:
 - Primary/secondary impression (eSituation.11, eSituation.12) OR primary/other symptom (eSituation.09/eSituation.10) starts with any of the following:
 - Apnea: R06.81
 - Cardiac arrest: I46
 - Respiratory failure: J96.0, J96.9
 - Non-specific drug overdose, Opioid Overdose
 - Narrative (eNarrative.01) or complaint (eSituation.04) contains opioid term
 - Naloxone administration is documented (eMedications.03).
 - Patient fatality is indicated
 - eDisposition.12 - Incident/Patient Disposition:
 - 4212013 Patient Dead at Scene-No Resuscitation Attempted (With Transport)
 - 4212015 Patient Dead at Scene-No Resuscitation Attempted (Without Transport)
 - 4212017 Patient Dead at Scene-Resuscitation Attempted (With Transport)
 - 4212019 Patient Dead at Scene-Resuscitation Attempted (Without Transport)
 - eSituation.13 - Initial Patient Acuity:
 - 2813007 Dead without Resuscitation Efforts (Black)
 - eDisposition.19 - Final Patient Acuity:
 - 4219007 Dead without Resuscitation Efforts (Black)
 - eArrest.16 - Reason CPR/Resuscitation Discontinued:
 - 3016005 Obvious Signs of Death
 - eArrest.18 - End of EMS Cardiac Arrest Event
 - 3018001 Expired in ED
 - 3018003 Expired in the Field



5. Opioid term mentioned in narrative (with no rule out term) AND Overdose term mentioned in narrative (with no rule out term) AND at least two additional positive matches (Narcan term, method term, LOC ruleset, physiologic sign term) AND there are no narcotic medications listed under administered medications:
 - Narrative (eNarrative.01) or complaint (eSituation.04) contains opioid term AND overdose term
 - Exclude if opioid term or overdose term is preceded by Rule Out term (within six words)
 - At least two of the following are positive matches
 - Narcan term found in Narrative (eNarrative.01) or complaint (eSituation.04)
 - Method term found in Narrative (eNarrative.01) or complaint (eSituation.04)
 - LOC Ruleset
 - LOC Term found in Narrative (eNarrative.01) or complaint (eSituation.04)
 - GCS<15
 - Primary/secondary impression (eSituation.11, eSituation.12) OR primary/other symptom (eSituation.09/eSituation.10) is R41.82 "Altered mental status, unspecified".
 - Sign term found in Narrative (eNarrative.01) or complaint (eSituation.04)
 - No narcotic medications listed under administered medications (eMedications.03).



Opioid Overdose Codes (ICD-10-CM):

- F11 - Opioid related disorders
- T40.0 - Poisoning by, adverse effect of and underdosing of opium
- T40.1 - Poisoning by and adverse effect of heroin
- T40.2 - Poisoning by, adverse effect of and underdosing of opioids
- T40.3 - Poisoning by, adverse effect of and underdosing of methadone
- T40.4 - Poisoning by, adverse effect of and underdosing of other synthetic narcotics- Fentanyl, Tramadol, etc.
- T40.6 - Poisoning by, adverse effect of and underdosing of other and unspecified narcotics

Non-specific Drug Overdose Codes (ICD-10-CM):

- F19 - Other psychoactive substance related disorders
- T50.9 - Poisoning by, adverse effect of and underdosing of other and unspecified drugs, medicaments and biological substances
- T65.9 - Toxic effect of unspecified substance

Narcotic Medication Codes (RXCUI)

- Fentanyl= "4337"
- Morphine= "7052"
- Oxycodone="7804"
- Hydromorphone ="3423"
- Tramadol= "10689"

Narcan/Naloxone Medication Codes (RXCUI)

- Naloxone= "7242"

Text search terms: PERL regular expressions given. * indicates that additional characters may follow.

Opioid Terms

((\b) (OPI?OID|OPIOI?D|OPIATE?|OPI?ATE|OPIUM|DOPE|SMACK|HER(OI|IO)NE?|SPEED\s?BALL|METHADONE|SUBOX[OI]NE?|MORPHINE?|TRAMADOL|BUPRENORPHINE|COD(EI|IE|E)NE|OXY|HOD|NORCO) (\b) | (\b) (OXYCO|PERCOC|VICOD|HYDROCOD|OXYMOR|DILAUD|HYDROMOR|FENT) |NITAZ(E|I)NE?)

- OPIOID, OPIOD, OPOID
- OPIATE, OPIAT, OPATE
- OPIUM
- DOPE
- SMACK
- HEROIN, HERION, HEROINE, HERIONE
- HOD
- SPEEDBALL, SPEED BALL
- METHADONE
- SUBOXONE, SUBOXINE, SUBOXON, SUBOXIN
- MORPHINE, MORPHIN
- TRAMADOL
- BUPRENORPHINE
- CODEINE, CODIENE, CODENE
- NORCO
- OXY, OXYCO*
- PERCOC*, VICOD*, HYDROCOD*
- OPANA, OXYMOR*
- DILAUD*, HYDROMOR*
- FENT*
- *NITAZENE, *NITAZINE, *NITAZEN ,*NITAZIN



Overdose Terms

(\b) (OVER\s? (DOSE|DOES) (D|ED)?|OD(.D)?) (\b)

- OVERDOSE, OVER DOSE, OVERDOES, OVER DOES, OVERDOSED, OVER DOSED, OVERDOESD, OVER DOESD, OVERDOSEED, OVER DOSEED, OVERDOESED, OVER DOESED
- OD, OD'D, ODED

LOC Ruleset

- Total GCS <15
- Primary/secondary impression (eSituation.11, eSituation.12) OR primary/other symptom (eSituation.09/eSituation.10) is R41.82 "Altered mental status, unspecified".
- LOC Terms

(\b) (NOD (DING)?\sOFF|UNRESPONSIVE?|UNCONSCIOUS|AMS|ALTERED MENTAL STATUS|ALTERED LOC|LOSS OF CONSCIOUSNESS|ALTERED LEVEL OF CONSCIOUSNESS|PASSED OUT) (\b)

- NODDING OFF, NOD OFF
- UNRESPONSIVE, UNRESPONSIV
- UNCONSCIOUS, UNCONCIOUS
- PASSED OUT
- AMS, ALTERED MENTAL STATUS
- ALTERED LOC, ALTERED LEVEL OF CONSCIOUSNESS, ALTERED LEVEL OF CONCIIOUSNESS
- LOSS OF CONSCIOUSNESS, LOSS OF CONCIIOUSNESS

Narcan Terms

NARCAN|NALOXONE|EVZIO|KLOXX?ADO

- NARCAN
- NALOXONE
- EVZIO
- KLOXXADO, KLOXADO

Physiological Signs Terms

(?:PIN\s?POINT\W+(?:\w+\W+){0,6}?PUPIL.{0,2}|PUPIL.{0,2}\W+(?:\w+\W+){0,6}?PIN\s?POINT)((INJECTION|TRACK)\s?MARK)\bBLUE\bCYANO

- PINPOINT PUPIL*, PUPIL* PINPOINT (can be separated by up to 6 words)
- INJECTION MARK*, TRACK MARK*
- BLUE*
- CYANO*

Method Terms

(\b) (INJECT|INJECTED) (\b) | (\b) (SNORT|TIN\s?FOIL|IN[GJ]EST|SMOKE|FREE\s?BASE) | (?: (SYRINGE|NEEDLE)\W+(?:\w+\W+){0,6}?SPOON|SPOON\W+(?:\w+\W+){0,6}? (SYRINGE|NEEDLE))

- INJECT, INJECTED
- SNORT*
- TINFOIL*, TIN FOIL*
- INGEST*, INJEST*
- SMOKE*
- FREEBASE*, FREE BASE*
- SYRINGE SPOON, SPOON SYRINGE, NEEDLE SPOON, SPOON NEEDLE (can be separated by up to 6 words)

Rule Out Terms

(?=(\bRULE\sOUT\s|\bR\O\s)) (?:\w+\W+){0,6} (&opioid_term.|&overdose_term.)

- RULE OUT
- R/O