

Opioid Overdose Data FAQ

EMS Data

1. What are Emergency Medical Services (EMS) data?

Montana statute 37.104.212 requires that all licensed ground and air transporting EMS agencies submit a patient care report (PCR) for each patient they encounter during an EMS incident. Non-transporting agencies may also submit data, though they are not required. EMS data includes patient demographics (e.g. age and sex), circumstances of the incident, condition of the patient, any medications provided or interventions done, and transport/disposition. The dataset includes structured variables, as well as a narrative field where providers enter a free text narrative about the incident. Montana has been collecting [NEMSIS v3.4](#) data since January 2017, and will transition to NEMSIS v3.5 in the near future.

2. What is NEMSIS?

NEMSIS stands for National EMS Information System. NEMSIS is the official EMS data collection standard for all EMS agencies in the country. It is an information systems compliance architecture which allows for standardization of data across different data systems, EMS agencies, and states. NEMSIS provides consistent definitions for data elements used in EMS and pre-hospital care settings. The NEMSIS v3.4 data dictionary is available [here](#).

3. What is an EMS Activation?

An EMS activation refers to a single record in the EMS dataset – each EMS activation represents one EMS agency’s encounter with one patient during their response to an incident. The EMS dataset is a registry of EMS activations - it is not a “patient-based” dataset. Because multiple EMS agencies can respond to the same incident and care for the same patient, or there could be multiple patients involved in the same incident, there can be more than one EMS activation (record) per patient or incident. One EMS record is not the same as one person or incident.

EMS activations can be grouped by response type (911/scene response, interfacility or medical transport, other) and patient disposition (transported, transferred care, patient refusal, canceled).

4. Can there be more than one EMS record for the same patient?

Yes. Because multiple EMS agencies can respond to the same incident and care for the same patient, there can be more than one EMS activation (record) per patient/incident. One EMS record is not the same as one person. For example, a non-transporting unit responds first to a 911 call - then a ground ambulance shows up to transport the patient. Perhaps the ground ambulance meets a helicopter en route due to the patient’s condition. There would be three records (EMS activations) representing this patient.

5. Why do EMS statistics about opioid overdoses change from time to time?

EMS numbers and statistics can change for a few reasons:

- Late submissions of patient care report (PCRs) – In 2021, the 90th percentile submission latency was ~4 days, meaning that 10% of records took longer than 4 days after the event date to be submitted.
- Updates made to existing PCRs
- Modifications of [Montana's EMS suspected opioid overdose syndrome definition](#) that is used to capture overdose events

While exact numbers may vary slightly, EMS data is an important tool for detecting trends or anomalies across the state in near real-time.

6. How are opioid overdoses identified using EMS data?

Epidemiologists analyze the EMS data and identify patient care reports (PCR) that meet the definition of an opioid overdose. The current definition can be found here: [Montana EMS Dataset: Suspected Opioid Overdose Definition \(mt.gov\)](#). The definition includes components of searching structured variable fields (i.e.- provider impression) as well as free-text analysis of the EMS narrative. Examples of what would qualify as a suspected opioid overdose include:

- Emergency care providers document a provider impression of opioid overdose
- Emergency care providers document that the patient was given naloxone (an opioid overdose reversal drug) and the patient's condition improved in response to it.

7. Can we use EMS data to track fentanyl overdoses?

No. EMS data is NOT the most effective source for identifying fentanyl overdoses. Because the signs/symptoms of a fentanyl overdose are similar to those of other opioids, it is often not possible for EMS providers to determine the specific type of opioid involved. If a specific opioid is mentioned in EMS documentation, this information is based on observation, patient self-report, or information from bystanders – rather than a definitive lab test, which are not performed in the pre-hospital setting. Because the presence of fentanyl requires laboratory testing, EMS data cannot be used to identify fentanyl overdoses

8. Can we track opioid overdose reversals using EMS data?

We can track probable opioid overdose reversals. If a patient was given naloxone and their condition subsequently improved, this is a probable overdose reversal. Because Montana's EMS dataset is not linked to hospital outcome information, we cannot say for sure whether an opioid overdose was reversed successfully.

9. What are the benefits of using EMS data to track opioid overdoses?

In general, patient care reports (PCRs) are uploaded and made available in the reporting dataset within 24 hours of the event. (In 2021, 68% of records had a latency time <24 hours, and 90% of records were submitted within 4 days of the event date). This near real-time data allows analysts to detect any trends or anomalies happening quickly across the state. In contrast, other data sources such as mortality (death) data or hospital discharge data can have a delay of 6 to 18 months after the event has occurred due to data verification and cleaning processes.

10. What are the limitations of using EMS data to track opioid overdoses?

There are several limitations to using EMS data to track opioid overdoses:

- EMS providers assign an "impression". This is not the same as a "diagnosis" which is given in the hospital. Therefore, we refer to "suspected" opioid overdoses when using EMS data
- EMS data is subject to data quality issues which can affect our ability to accurately capture opioid overdoses
- EMS data does not capture overdoses where EMS did not make patient contact
- EMS data does not capture most naloxone administrations by law enforcement or the public. For example, if a bystander gives naloxone and reverses an overdose and the patient refuses further care, this would not be captured within the EMS dataset.

ED Visit and Hospitalization Discharge Data

1. How are opioid overdoses identified in emergency department discharge data?

If there is any mention of an opioid overdose ICD-10-CM code in ED visit record, it is classified as an opioid overdose-related ED visit.

2. How are opioid overdoses identified in hospital discharge data?

If there is any mention of opioid overdose ICD-10-CM code in hospitalization record, it is classified as an opioid overdose-related hospitalization.

3. What is the difference between ED visit and hospitalization data?

Hospitalizations refer to patients who are admitted for inpatient care – which usually occurs for more serious cases. The exception being if the patient dies in the ED before inpatient admission could occur. ED visits that result in admission to the hospital are NOT included in the ED visit dataset – only in the hospitalization dataset.

4. Can we use ED visit and/or hospitalization data to track fentanyl overdoses?

Yes. A new ICD-10-CM code specific to fentanyl (T40.41) was introduced in October 2020 which allows us to definitively capture fentanyl involvement. However, due to the code being new it may take time for medical coders to utilize it.

5. What are the benefits of using ED and hospital discharge data to track opioid overdoses?

As opposed to EMS data, ED and hospital discharge data include diagnosis codes (ICD codes) that are based on lab results and physician expertise. This provides a definitive answer to opioid involvement.

6. What are the limitations of using ED and hospital discharge data to track opioid overdoses?

ED and hospital discharge data for a full year are released all at once, usually six to seven months after the calendar year has finished. This does not allow for real-time tracking of overdoses.

ED and hospital discharge data does not include data from patients that died in the field.

ED Syndromic Surveillance Data

1. How are opioid overdoses identified in ED syndromic surveillance data (ESSENCE)?

Opioid overdose patients that arrive at Montana EDs are tracked using ESSENCE. ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics) is a web-based syndromic surveillance system designed for the early detection of disease outbreaks, suspicious patterns of illness, and public health emergencies. ESSENCE collects, processes, and analyzes information from patient records (such as chief complaints and triage notes from ED visits) to identify anomalous disease activity in a community. These records are uploaded by participating hospitals every 24 hours, generally.

To standardize syndromic surveillance of overdoses nationwide, the CDC created pre-set syndrome definitions for any drug overdose, all opioid overdoses, heroin overdoses, and stimulant overdoses. These definitions can be queried by location and time to create a temporo-spatial understanding of overdose in Montana.

2. What is the difference between ED discharge data and ED syndromic surveillance data (ESSENCE)?

ED discharge data is a final, cleaned, and verified dataset that is made available to epidemiologists in one-year increments. ED syndromic data is updated every 24 hours but is subject to change as the patient's file is updated or edited to reflect changes in their care or diagnoses.

The ED discharge dataset is derived from billing data, while the ED syndromic surveillance data capture some narrative and other elements from the electronic health record that would not be available on the billing form – chief complaint, triage notes, initial temperature, initial pulse oximetry percent, height, weight, BP.

ESSENCE is not subject to the same exclusion criteria as ED discharge data (which excludes VA and IHS hospitals). Any hospital with an emergency and/or urgent care department and the ability to meet the current PHIN HL7 messaging requirements can submit syndromic surveillance data to ESSENCE. Currently, no Montana HIS facilities submit data to ESSENCE, and VA hospitals have only been submitting a limited dataset during the COVID pandemic.

3. What are the benefits of using ED syndromic surveillance (ESSENCE) data to track opioid overdoses?

Over 90% of ED visits in Montana are captured in ED syndromic surveillance data. Since these data are updated every 24 hours, it may be used to observe any trends as they are happening across the state. With syndromic surveillance, both chief complaint and discharge diagnosis codes are used to identify opioid overdose ED visits. The chief complaint provides a level of detail not available from the diagnosis code descriptions alone.

4. What are the limitations of using ED syndromic surveillance data to track opioid overdoses?

- Not every hospital submits data to the ED syndromic surveillance dataset, which leaves some gaps in surveillance coverage.
- Hospital connectivity and submission issues can cause artificial fluctuations in the volume of overall and condition-specific ED visits over time
- These data are also subject to change—laboratory results as well as final diagnoses are not always included in this dataset.
- There is substantial variability in the completeness and quality of the data by facility
- Approximately 10-15% of ED visits have missing discharge diagnoses
- The level of detail included in the chief complaint varies by facility

Mortality (Death Certificate) Data

1. How are opioid overdoses identified in mortality (death) data?

Mortality data is pulled from death certificates, which include information on the underlying and contributing causes of death. If there is any mention of an opioid overdose ICD-10 code on the death certificate, it is classified as an opioid overdose.

2. Can we use death data to track fentanyl overdoses?

To an extent, yes. Death certificates use ICD-10 codes when reporting causes of death. Unfortunately, unlike ICD-10-CM codes used in ED and hospital discharge records, there is no specific ICD-10 code for fentanyl as a cause of death at this time. The closest existing ICD-10 code is "T40.4- Other Synthetic

Narcotics”, which is not specific to fentanyl (it can include fentanyl & fentanyl analogs, pethidine, levorphanol, tramadol, and dextropropoxyphene).

However, death certificates contain a free text field where coroners or medical examiners may add extra information outside of the ICD code fields. In the event of overdoses, coroners and medical examiners may write out the exact substances identified in a toxicology screen conducted during an autopsy. If the word “fentanyl” is written in a free text field, we can positively identify the death as fentanyl-related.

Limitations for using this data source to capture fentanyl overdose include:

- Not every overdose death receives an autopsy and post-mortem toxicologic screen that can definitively identify the presence of fentanyl (around 6.3% of deaths in Montana receive an autopsy according to 2020 Medical Examiners annual report)
- Even if fentanyl is known to be involved, some coroners or medical examiners fail to document this in the free text fields of the death certificate

3. What are the benefits of using death data to track opioid overdoses?

All deaths are required to have a death certificate which must include a cause of death. This means that death certificate data is representative of the Montana population.

4. What are the limitations of using death data to track opioid overdoses?

Mortality data for a full year are released all at once, usually six to seven months after the calendar year has finished. This does not allow for real-time tracking of overdoses.

There are inconsistencies with coroner’s and medical examiner’s methodology in completing death certificate data.

Not every overdose death receives an autopsy or has toxicologic testing, which means the specific substance(s) involved in a death may not be definitively known.

Crime Lab Data

1. What kind of data on opioids is available from the state crime lab (Forensic Science division)?

Autopsy data, postmortem toxicology data, and seized drug data. Autopsy data and postmortem toxicology data both pertain to deaths, and seized drug data refers to drugs found/taken by law enforcement during an incident.

2. What is the difference between autopsy data and post-mortem toxicology data?

Autopsy data comes from the Medical Examiner’s Office and postmortem toxicology data comes from the Toxicology Section.

Autopsies tell us about the causes of death. Post-mortem toxicology tells us what (if any) substances were present in a dead body but does not tell us whether those substances were related to the cause of death.

3. What are the benefits of using autopsy data to track opioid overdoses?

Most autopsies will involve a postmortem toxicology analysis. Significant toxicology results on autopsied cases can confirm the role of opioids, including fentanyl, in drug overdose deaths. Autopsied cases are typically finalized in less than 90 days.

4. What are the limitations of using autopsy data to track opioid overdoses?

Autopsies are only done on around 6% of all deaths in Montana. Generally, the need for an autopsy is determined by the county coroner per Title 46, Chapter 4, Part 1 of Montana Code Annotated. At the discretion of county coroners, selected suicides, overdoses, traffic fatalities, and well-established natural deaths are not submitted for autopsy. Therefore, Autopsy data can be used for looking at trends in opioid overdoses but is not representative of the entire state.

5. Can postmortem toxicology data be used to track opioid overdoses?

Yes, but is important to recognize that the presence of a drug in a postmortem tox case does NOT necessarily mean that it was part of the cause of death. Therefore, this data source is not representative of opioid overdose deaths.

Post-mortem toxicology testing is done on around 12% of deaths in Montana. Toxicology results provide a detailed picture of which substances were present in the decedent, distinguishing between acute single drug or poly-drug combinations.