
Virginia Department of Health

Office of Emergency Medical Services (OEMS)

Short Report: Prehospital Trauma Patient Naloxone Administrations,
Virginia, July 1, 2022 – June 30, 2023

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This report is based on the deliberations and analyses performed by OEMS Epidemiology staff. Please be advised that the accuracy of the data within ESO is limited by system performance and the accuracy of data submissions from Emergency Medical Services (EMS) agencies. See Appendix 1 for information on the data source and processing steps that generated this report.

Data Quality Overview

Of the 98,663 prehospital trauma patients transported by a Virginia EMS agency between July 1, 2022, and June 30, 2023, **116 (0.1%) incidents involved administration of naloxone.**

- Eighty (69.0%) of the 116 incidents documented receipt of Naloxone or Narcan in the Medication Given (eMedications.03) field. Of these:
 - Naloxone administration occurred only prior to EMS arrival in 4 (5.0%) incidents. The remaining 76 (95.0%) incidents reported at least one naloxone administration by EMS.
 - Most (n = 60, 75.0%) patients received one dose of naloxone. Fourteen (17.5%) patients received two doses, 2 (2.5%) received three doses, and 4 (5.0%) received four doses.
 - Forty-five (56.3%) patients experienced improvement in symptoms after receiving at least one dose of naloxone.
- Thirty-six (31.0%) of the 116 incidents only documented receipt of Naloxone or Narcan in the Patient Care Report Narrative (enarrative.01). These records were identified by manual review of the narrative; naloxone administration data were not reported in the Medication Given field. Of these:
 - In 22 (61.1%) narratives, naloxone was noted to be administered by an EMS clinician. In 13 (36.1%) narratives, naloxone was noted to be administered by someone other than an EMS clinician (e.g., a bystander, law enforcement officer). In 1 (2.8%) patient care narrative, the person administering naloxone was not described.
 - The number of naloxone doses administered and the patient’s response to naloxone was not documented in most patient care narratives.



Almost **1** out of every **3** records only documented naloxone administration in the patient care narrative

Summary of Analyses

EMS administration of at least one naloxone dose was documented for **98 (0.1%) incidents.** Of these:

- Nine (9.2%) patients were transported by an air medical unit.
- Seventy-two (73.5%) patients were classified as Step 1 trauma patients. The remaining 26 (26.5%) patients did not meet step classification. Of the Step 1 incidents, 21 (29.2%) were under-triaged (i.e., transported to a Level III or non-trauma center).
- One (1.0%) incident occurred in a pediatric patient, 76 (77.6%) among adults, and 21 (21.4%) among geriatric patients.
- Fifty-eight (59.2%) incidents had no information reported on alcohol or drug use indicators. Known drug or alcohol use was documented in 22 (22.4%) incidents, while 18 (18.4%) incidents involved suspected drug or alcohol use (See Appendix 1).
- The most frequently reported provider’s primary impressions were “Injury, unspecified” (n=23, 23.5%), followed by “Suicide attempt” (n=22, 22.4%), “Unspecified injury to head” (n=14, 14.3%), and “Concussion with loss of consciousness of unspecified duration” (n=12, 12.2%).

74% of naloxone incidents met Step 1 criteria

29% of those Step 1 patients were under-triaged

1% of patients were pediatric

78% of patients were adults

21% of patients were geriatric



We want to thank our EMS providers and agencies who spend considerable time and effort reporting EMS encounter data. Without you, we would not be able to conduct meaningful prehospital research. Your work helps improve EMS patient care in Virginia and greatly increases industry knowledge.

thank you

Appendix 1: Methodology

- Data were collected from the Virginia Prehospital Information Bridge (VPHIB) and ESO prehospital data systems, maintained by the Virginia OEMS.
- The data fields utilized in this report were ESORECORDID, Datetime Unit Notified by Dispatch (eTimes.03), Patient Incident Disposition (eDisposition.12), Type of Service Requested (eResponse.05), Provider's Primary Impression (eSituation.11), Mass Casualty Incident (eScene.07), Primary Role of the Unit (eResponse.07), First Gathered Systolic Blood Pressure (eVitals.06), First Gathered Respiratory Rate (eVitals.14), First Gathered Total Glasgow Coma Score (eVitals.23), Trauma Center Criteria (eInjury.03), Vehicular, Pedestrian, or Other Injury Risk Factor (eInjury.04), Age (ePatient.15), Age Units, (ePatient.16), Destination/Transferred To Name (eDisposition.01), Destination/Transferred To Code (eDisposition.01 code), Medication Administered Prior to this Unit EMS Care (eMedications.02), Medication Given (eMedication.03), Response to Medication (eMedications.07), Alcohol or Drug Use Indicators (eHistory.17), Patient Care Report Narrative (eNarrative.01), and Submission Status.
- Inclusion criteria:
 - Datetime Unit Notified by Dispatch (eTimes.03) is between July 1, 2022, 00:00:00 ET, and June 30, 2023, 23:59:59 ET, and
 - Records that meet the Virginia case definition of EMS trauma patients, consistent with the [OEMS Quarterly Report on EMS Trauma Incidents](#) and [EMS Trauma Triage Dashboard](#):
 - Patient Incident Disposition (eDisposition.12) is equal to Treated and Transported by this EMS Unit, and
 - Type of Service Requested (eResponse.05) is equal to 911 Response (Scene), and
 - Provider's Primary Impression (eSituation.11) is consistent with the ICD-10 codes listed in the EMS trauma patient case definition, available in the [OEMS Quarterly Report on EMS Trauma Incidents](#) (see Table 1 of each report) and [EMS Trauma Triage Dashboard](#) (see the overview section information icon).
- Exclusion criteria:
 - Records with a Submission Status of "Failed" or "Pending" at the time data were queried from the VPHIB.
 - Quarter 3 2022 Trauma Triage data query: November 15, 2022

- Quarter 4 2022 Trauma Triage data query: February 10, 2023
- Quarter 1 2023 Trauma Triage data query: July 5, 2023
- Quarter 2 2023 Trauma Triage data query: September 5, 2023
- Step Classification was determined according to the Virginia Field Trauma Decision Scheme, available in the [OEMS Quarterly Report on EMS Trauma Incidents](#) (see Figure 1 of each report) and [EMS Trauma Triage Dashboard](#) (see the EMS Trauma Triage Classification section flow chart icon). Data elements utilized were First Gathered Systolic Blood Pressure (eVitals.06), First Gathered Respiratory Rate (eVitals.14) with Age (ePatient.15) and Age Units (ePatient.16), First Gathered Total Glasgow Coma Score (eVitals.23), Trauma Center Criteria (eInjury.03), and Vehicular, Pedestrian, or Other Injury Risk Factor (eInjury.04).
- Triage Status was determined according to the Virginia Trauma Triage Decision Scheme using Step Classification and the Trauma Center Designation of the destination (eDisposition.01), available in the [OEMS Quarterly Report on EMS Trauma Incidents](#) (see Figure 1 of each report) and [EMS Trauma Triage Dashboard](#) (see the EMS Trauma Triage Classification section flow chart icon). Triage Status was defined as:
 - Under-triaged:
 - Step 1 patients transported to a Level III or non-trauma center,
 - Step 2 patients transported to a Level III or non-trauma center, and
 - Step 3 patients transported to a non-trauma center.
 - Appropriately triaged:
 - Step 1 patients transported to a Level I or II trauma center,
 - Step 2 patients transported to a Level I or II trauma center, and
 - Step 3 patients transported to a Level I, II, or III trauma center.
- Naloxone administration was defined as records with a Medication Given (eMedications.03) value containing “aloxone” or “arcan” or records containing “aloxone” or “arcan” in the Patient Care Report Narrative (eNarrative.01).
 - Records containing “aloxone” or “arcan” in the patient narrative were manually reviewed for inclusion.
- Total number of naloxone administrations was based on the number of reported values of “aloxone” or “arcan” in the Medication Given (eMedications.03) field.
- Patients with improvement in symptoms following naloxone administration were defined as records containing “aloxone” or “arcan” in the Medication Given (eMedications.03) field and containing “Improved” in the Response to Medication (eMedications.07) field.
- Naloxone administration occurring prior to EMS arrival was determined using the Medication Administered Prior to this Unit’s EMS Care (eMedications.02) field. Records with naloxone administration occurring prior to EMS arrival were defined as containing a response of “Yes” in this field, while records with naloxone administered by EMS were defined as containing a response of “No” in this field.
 - In this report, the two categories are presented as mutually exclusive. During analyses, two records with a value of “Yes” for one naloxone administration and a value of “No” for a second naloxone administration were counted as having received naloxone by EMS; these records were not included in the count of naloxone administrations occurring prior to EMS arrival.

- Alcohol or drug use was determined using the Alcohol/Drug Use Indicators (eHistory.17) field, defined as:
 - Known Alcohol or Drug Use: contains “Patient Admits to Drug Use”, “Patient Admits to Alcohol Use” or “Positive Level Known from Law Enforcement or Hospital Record”.
 - Suspected Alcohol or Drug Use: contains “Paraphernalia at Scene” or “Smell of Alcohol on Breath” and does not meet criteria for Known Alcohol or Drug Use.
- Age Group was determined using Age (ePatient.15) and Age Units (ePatient.16), defined as:
 - Pediatric: 0-14 years old
 - Adult: 15-64 years old
 - Geriatric: 65+ years old