Virginia Department of Health

Office of Emergency Medical Services (OEMS)

Quarterly Report on EMS Incidents

Q4 2024

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This report is based on analyses requested by the Medical Direction Committee and performed by Office of EMS Epidemiology staff. The accuracy of the data within this report is limited by system performance and the accuracy of data submissions from EMS agencies.

Quarter 4 2024 data for this report was collected from the ESO Pre-hospital Data System (NEMSIS version 3.4 and 3.5) on March 6, 2025. Importantly, many records submitted by Virginia EMS agencies for incidents occurring during the fourth quarter of 2024 failed to pass established validation rules and are not counted in the dataset used for this report (see Table 1).

Table 1. Counts of Failed Records by Month, Fourth Quarter, 2024, Virginia

Month	Total Failed Records
October	3,436
November	3,489
December	3,200

Virginia EMS Call Summary, Fourth Quarter, 2024

EMS agencies in Virginia responded to a total of 442,980 EMS calls during the fourth quarter of 2024 (see Tables 2—5 and Figure 1).

Table 2. Number of EMS Incidents by Type of Service Requested and Disposition, Fourth Quarter, 2024, Virginia

Incident/ Patient Disposition	**Type of Service Requested**								**Total**
	911 Response (Scene)	Intercept/ Rendezvous	Interfacility Transport	Medical Transport	Mutual Aid	Public Assistance/ Not Listed	Standby	Blank	
Assist (Agency, Public, or Unit)	7,027	23	26	18	67	835	228	0	**8,224**
Canceled (Prior to Arrival at Scene or On Scene)	59,804	158	1,585	1,001	454	1,605	727	0	**65,334**
Patient Dead at Scene (with and without resucitation; with and without transport)	2,235	7	38	16	14	56	1	0	**2,367**
Patient Evaluated, No Treatment/Transport Required	4,729	3	12	17	10	172	11	0	**4,954**
Patient Refused Evaluation/Care (with or without transport)	25,676	59	60	78	71	518	53	0	**26,515**
Patient Treated, Released (AMA or per protocol)	18,462	25	72	256	62	556	41	0	**19,474**
Patient Treated, Transferred Care to Another EMS Unit	13,961	51	98	120	63	167	23	0	**14,483**
Patient Treated, Transported by Law Enforcement	207	2	0	2	0	8	0	0	**219**
Patient Treated, Transported by Private Vehicle	636	1	3	2	0	12	3	0	**657**
Patient Treated, Transported by this Unit	191,295	507	46,992	49,456	533	2,593	68	0	**291,444**
Standby (no services/support provided or public safety, fire, or EMS operational support provided)	7,307	22	36	35	81	1,041	658	0	**9,180**
Transport Non-Patient, Organs, etc.	5	0	19	16	1	35	8	0	**84**
Blank	38	0	1	0	5	1	0	0	**45**
Total	**331,382**	**858**	**48,942**	**51,017**	**1,361**	**7,599**	**1,821**	**0**	**442,980**

Table 3. Number of EMS Incidents by Type of Service Requested and Age Group, Fourth Quarter, 2024, Virginia

Type of Service Requested	Age Group							Total
	0-4 years	5-12 years	13-17 years	18-24 years	25-64 years	65 and older	Unknown	
911 Response (Scene)	5,858	4,800	5,965	15,506	108,582	119,673	70,998	**331,382**
Intercept/ Rendezvous	22	10	15	40	297	279	195	**858**
Interfacility Transport	1,836	1,178	1,339	1,609	17,507	24,996	477	**48,942**
Medical Transport	293	232	368	347	12,345	37,181	251	**51,017**
Mutual Aid	17	16	18	41	317	374	578	**1,361**
Public Assistance/ Other Not Listed	81	61	64	154	1,645	3,038	2,556	**7,599**
Standby	11	5	51	31	87	53	1,583	**1,821**
Total	**8,118**	**6,302**	**7,820**	**17,728**	**140,780**	**185,594**	**76,638**	**442,980**

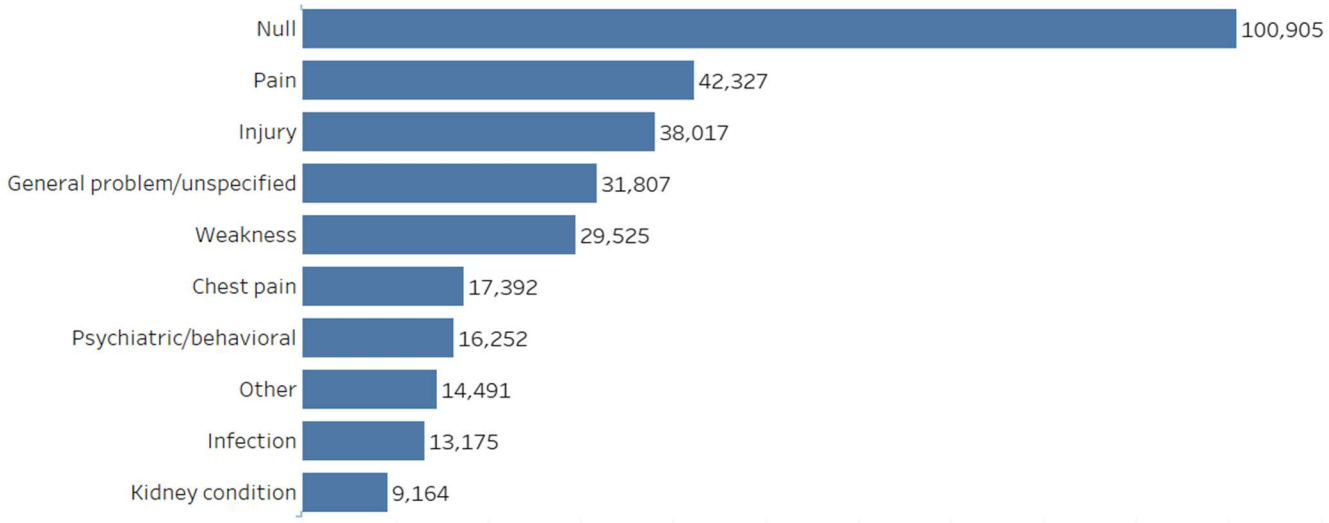
Table 4. Number of EMS Incidents by Patient Disposition and Age Group, Fourth Quarter, 2024, Virginia

Incident/ Patient Disposition	Age Group							Total
	0-4 years	5-12 years	13-17 years	18-24 years	25-64 years	65 and older	Unknown	
Assist (Agency, Public, or Unit)	61	27	26	53	293	733	7,031	**8,224**
Canceled (Prior to Arrival at Scene or On Scene)	366	211	203	308	1,842	2,749	59,655	**65,334**
Patient Dead at Scene (with and without resucitation; with and without transport)	14	3	8	53	887	1,393	9	**2,367**
Patient Evaluated, No Treatment/ Transport Required	276	172	156	363	1,935	2,038	14	**4,954**

Table 4 (continued). Number of EMS Incidents by Patient Disposition and Age Group, Fourth Quarter, 2024, Virginia

Incident/ Patient Disposition	Age Group							Total
	0-4 years	5-12 years	13-17 years	18-24 years	25-64 years	65 and older	Unknown	
Patient Refused Evaluation/Care (with or without transport)	898	844	1,036	2,577	11,780	9,271	109	**26,515**
Patient Treated, Released (AMA or per protocol)	585	544	643	1,407	7,819	8,130	346	**19,474**
Patient Treated, Transferred Care to Another EMS Unit	291	230	326	784	5,801	5,852	1,199	**14,483**
Patient Treated, Transported by Law Enforcement	1	3	13	31	155	16	0	**219**
Patient Treated, Transported by Private Vehicle	67	55	57	70	239	167	2	**657**
Patient Treated, Transported by this EMS Unit	5,489	4,186	5,318	12,026	109,728	154,603	94	**291,444**
Standby (no services/support provided or public safety, fire, or EMS operational support provided)	62	23	33	49	267	601	8,145	**9,180**
Transport Non-Patient, Organs, etc.	8	4	1	5	23	32	11	**84**
Blank	0	0	0	2	11	9	23	**45**
Total	**8,118**	**6,302**	**7,820**	**17,728**	**140,780**	**185,594**	**76,638**	**442,980**

Figure 1. All EMS Incidents by Top 10 Primary Impression Categories, Fourth Quarter, 2024, Virginia



Of the 442,980 total EMS calls that occurred during the fourth quarter of 2024, a total of 191,295 (43.2%) represented emergency response incidents (i.e., incidents with a Type of Service Requested equal to "911 Response (Scene)" and a Patient Disposition of "Patient Treated, Transported by this EMS Unit").

Figure 2. Emergency Responses by Top 10 Primary Impression Categories, Fourth Quarter, 2024, Virginia

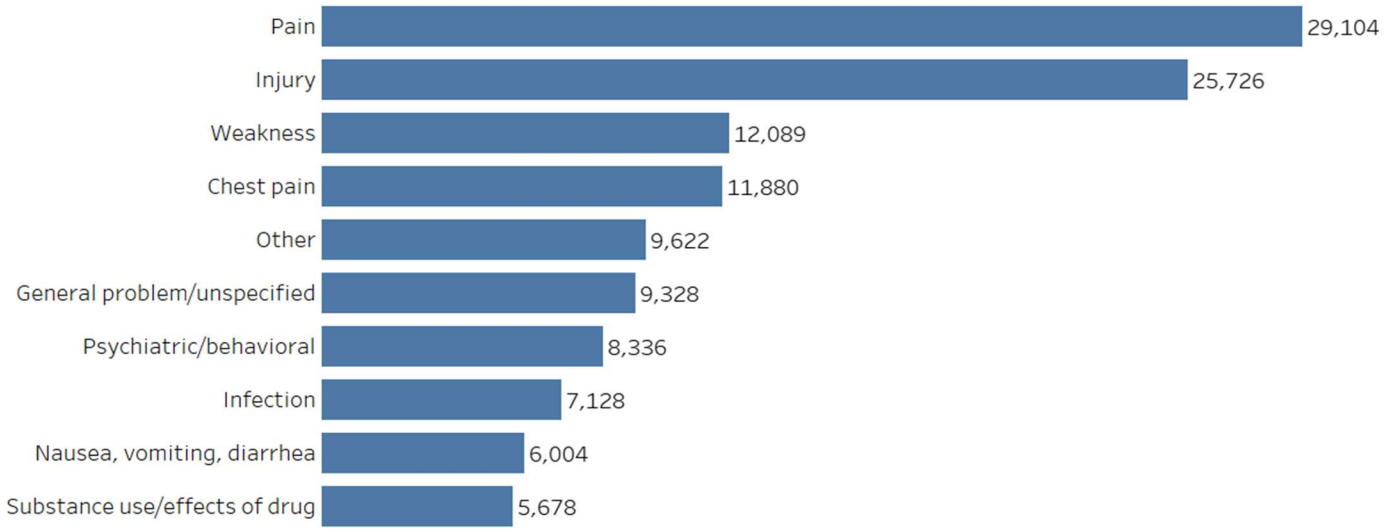


Table 5. Top 10 Primary Impressions for Emergency Responses by Patient Age Group, Fourth Quarter, 2024, Virginia

Provider Primary Impression	Age Group						
	0-4 years	**5-12 years**	**13-17 years**	**18-24 years**	**25-64 years**	**65 and older**	**Unknown**
1	Seizure/ convulsions	Injury	Injury	Injury	Pain	Pain	Injury
2	Infection	Seizure/ convulsions	Psychiatric/ behavioral	Pain	Injury	Injury	Substance use/ effects of drug
3	General problem/ unspecified	Pain	Pain	Psychiatric/ behavioral	Chest pain	Weakness	Other
4	Injury	Infection	Seizure/ convulsions	Substance use/ effects of drug	Psychiatric/ behavioral	Other	Brain injury/death
5	Fluid in/around the lungs	General problem/ unspecified	Substance use/ effects of drug	Seizure/ convulsions	Substance use/ effects of drug	Chest pain	Pain
6	Fever	Asthma	Syncope/near syncope	Nausea, vomiting, diarrhea	General problem/ unspecified	General problem/ unspecified	Awareness/ consciousness problem
7	Other	Allergic reaction	Allergic reaction	Chest pain	Weakness	Infection	Psychiatric/ behavioral
8	Breathing abnormalities	Psychiatric/ behavioral	Brain injury/ death	General problem/ unspecified	Other	Breathing abnormalities	Null
9	Allergic reaction	Fluid in/around the lungs	Other	Obstetric condition	Seizures/ convulsions	Fluid in/around the lungs	General problem/ unspecified*
10	Pain	Breathing abnormalities	General problem/ unspecified	Syncope/near syncope	Nausea, vomiting, diarrhea	Nausea, vomiting, diarrhea	Chest pain*

*Multiple Provider Primary Impressions were tied for the rankings denoted by an asterisk.

Chest Pain Emergency Responses

Importantly, a provider impression of "chest pain" can include multiple causes of chest pain, not specific or limited to chest pain of cardiac causes.

Non-Traumatic Chest Pain

Non-traumatic chest pain incidents are defined as those with a primary impression that includes the words "chest pain," "myocardial infarction," or "angina". Incidents with a response of "yes" in the possible injury (esituation.02) field and/or that have a primary impression that includes the words "injury," "trauma," or "burn" are excluded. Twelve-lead acquisition is defined as ECG type (evitals.04) or Procedure (eprocedures.03) = 12 lead-left sided (normal), 12 lead-right sided, 15 lead, or 18 lead. Of the 191,295 emergency response incidents reported by EMS during the fourth quarter of 2024, 10,525 (5.5%) non-traumatic chest pain incidents were identified in patients 35 years of age and older. Of these, a total of 8,753 (83.2%) patients had 12-lead acquisition and 5,640 (53.6%) had aspirin administration documented in the record, either taken daily or administered by EMS.

Table 6. Emergency Responses Among Non-Traumatic Chest Pain Patients ≥ 35 Years of Age with 12-lead Acquisition by EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Number Patients	Number of Patients with 12-Lead Acquisition	Percent With 12-Lead Acquisition Documented	Percent Without 12-Lead Acquisition Documented
Blue Ridge	450	381	84.7	15.3
Central Shenandoah	446	383	85.9	14.1
Lord Fairfax	332	312	94.0	6.0
Northern Virginia	1,699	1,251	73.6	26.4
Old Dominion	2,163	1,575	72.8	27.2
Peninsulas	892	817	91.6	8.4
Rappahannock	659	625	94.8	5.2
Southwest Virginia	567	439	77.4	22.6
Thomas Jefferson	413	380	92.0	8.0
Tidewater	1,775	1,615	91.0	9.0
Western Virginia	1,120	970	86.6	13.4
Out of State	9	5	55.6	44.4
Total	**10,525**	**8,753**	**83.2**	**16.8**

Table 7. Emergency Responses Among Non-Traumatic Chest Pain Patients ≥ 35 Years of Age with Aspirin Administration* by EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Number Patients	Number of Patients with Aspirin Administration	Percent With Aspirin Administration Documented	Percent Without Aspirin Administration Documented
Blue Ridge	450	298	66.2	33.8
Central Shenandoah	446	254	57.0	43.0
Lord Fairfax	332	158	47.6	52.4
Northern Virginia	1,699	725	42.7	57.3
Old Dominion	2,163	1,240	57.3	42.7
Peninsulas	892	478	53.6	46.4
Rappahannock	659	399	60.5	39.5
Southwest Virginia	567	332	58.6	41.4
Thomas Jefferson	413	260	63.0	37.0
Tidewater	1,775	912	51.4	48.6
Western Virginia	1,120	581	51.9	48.1
Out of State	9	3	33.3	66.7
Total	**10,525**	**5,640**	**53.6**	**46.4**

*Includes documentation of medication administration or relevant pertinent negative.

Narrative Review

Of the 4,885 non-traumatic chest pain incidents occurring in patients ≥ 35 years of age without aspirin administration or a pertinent negative documented, 25 incidents were randomly selected for narrative review. For one (4.0%) patient, aspirin administration prior to the arrival of EMS was documented in the narrative. For one (4.0%) patient, EMS administration of aspirin was documented in the narrative. For seven (28.0%) patients, a pertinent negative was documented in the narrative. The remaining 16 (64.0%) records did not have aspirin administration or a pertinent negative documented in the narrative.

STEMI Patients

STEMI incidents are defined as those with a documented:

- impression or symptom of myocardial infarction, or
- impression or symptom of unstable angina or angina pectoris and a cardiac rhythm of left bundle branch block, or
- cardiac rhythm of STEMI, or
- STEMI protocol used, or
- STEMI pre-arrival activation.

Time to receive an EKG is defined as the difference between the date/time the EMS clinician arrived at the patient and the date/time an EKG was performed. Of the 191,295 emergency response incidents reported by EMS during the fourth quarter of 2024, 885 (0.5%) STEMI incidents were identified. Of these, 645 (72.9%) patients had 12-lead acquisition, with 624 (96.7%) records containing information on the time between arrival at patient and when an EKG was performed. Of these 624 records, time to receive an EKG ranged from 0 minutes to 46 minutes and 53 seconds. It took a median of 6 minutes and 45 seconds and an average of 8 minutes and 52 seconds for the 624 STEMI patients to receive an EKG.

Stroke Emergency Responses

Stroke incidents are defined as those with a documented primary/secondary impression/symptom of stroke, a positive stroke scale score, a destination activation for stroke, or a stroke/TIA protocol used by an EMS clinician. Of the 191,295 emergency response incidents reported by EMS during the fourth quarter of 2024, 5,138 (2.7%) stroke incidents were identified. Of the stroke incidents, 4,168 (81.1%) documented the performance of a stroke scale or a pertinent negative, 4,636 (90.2%) had a blood glucose or pertinent negative recorded, and 5,118 (99.6%) had the date/time the patient was last known well or the date/time of the patient's symptom onset recorded. For 1,256 (24.4%) patients, the interval between symptom onset and EMS clinician arrival at the patient was greater than 4.5 hours and less than 24 hours.

Table 8. Emergency Responses Among Stroke Patients by Destination Hospital Stroke Certification Level and EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Number Stroke Patients	Number (% Across) of Patients Transported to Out of State Facilities	Number (% Across) of Patients Not Transported to a Certified Facility	Number (% Across) of Patients Transported to Acute Stroke Ready Facilities	Number (% Across) of Patients Transported to Primary Stroke Centers	Number (% Across) of Patients Transported to Thrombectomy Capable Hospitals	Number (% Across) of Patients Transported to Comprehensive Stroke Centers
Blue Ridge	289	1 (0.3)	10 (3.5)	0 (0.0)	2 (0.7)	276 (95.5)	0 (0.0)
Central Shenandoah	202	0 (0.0)	24 (11.9)	0 (0.0)	173 (85.6)	0 (0.0)	5 (2.5)
Lord Fairfax	99	0 (0.0)	15 (15.2)	0 (0.0)	84 (84.8)	0 (0.0)	0 (0.0)
Northern Virginia	834	3 (0.4)	46 (5.5)	28 (3.4)	306 (36.7)	83 (10.0)	368 (44.1)
Old Dominion	1,107	4 (0.4)	73 (6.6)	2 (0.2)	410 (37.0)	5 (0.5)	613 (55.4)
Peninsulas	369	0 (0.0)	13 (3.5)	0 (0.0)	120 (32.5)	0 (0.0)	236 (64.0)
Rappahannock	306	0 (0.0)	45 (14.7)	0 (0.0)	238 (77.8)	0 (0.0)	23 (7.5)
Southwest Virginia	241	53 (22.0)	140 (58.1)	0 (0.0)	44 (18.3)	4 (1.7)	0 (0.0)
Thomas Jefferson	218	0 (0.0)	17 (7.8)	0 (0.0)	8 (3.7)	1 (0.5)	192 (88.1)
Tidewater	894	5 (0.6)	23 (2.6)	27 (3.0)	549 (61.4)	0 (0.0)	290 (32.4)
Western Virginia	558	7 (1.3)	124 (22.2)	33 (5.9)	173 (31.0)	220 (39.4)	1 (0.2)
Out of State	21	15 (71.4)	2 (9.5)	0 (0.0)	0 (0.0)	4 (19.0)	0 (0.0)
Total	**5,138**	**88 (1.7)**	**532 (10.4)**	**90 (1.8)**	**2,107 (41.0)**	**593 (11.5)**	**1,728 (33.6)**

Table 9. Emergency Responses Among Stroke Patients with Symptom Onset Between 4.5 and 24 Hours Prior to EMS Arrival by Destination Hospital Stroke Certification Level and EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Number Stroke Patients	Number (% Across) of Patients Transported to Out of State Facilities	Number (% Across) of Patients Not Transported to a Certified Facility	Number (% Across) of Patients Transported to Acute Stroke Ready Facilities	Number (% Across) of Patients Transported to Primary Stroke Centers	Number (% Across) of Patients Transported to Thrombectomy Capable Hospitals	Number (% Across) of Patients Transported to Comprehensive Stroke Centers
Blue Ridge	81	0 (0.0)	2 (2.5)	0 (0.0)	1 (1.2)	78 (96.3)	0 (0.0)
Central Shenandoah	44	0 (0.0)	3 (6.8)	0 (0.0)	41 (93.2)	0 (0.0)	0 (0.0)
Lord Fairfax	30	0 (0.0)	3 (10.0)	0 (0.0)	27 (90.0)	0 (0.0)	0 (0.0)
Northern Virginia	221	1 (0.5)	14 (6.3)	5 (2.3)	89 (40.3)	27 (12.2)	85 (38.5)
Old Dominion	281	1 (0.4)	17 (6.0)	0 (0.0)	95 (33.8)	1 (0.4)	167 (59.4)
Peninsulas	98	0 (0.0)	1 (1.0)	0 (0.0)	32 (32.7)	0 (0.0)	65 (66.3)
Rappahannock	72	0 (0.0)	12 (16.7)	0 (0.0)	55 (76.4)	0 (0.0)	5 (6.9)
Southwest Virginia	56	8 (14.3)	38 (67.9)	0 (0.0)	9 (16.1)	1 (1.8)	0 (0.0)
Thomas Jefferson	53	0 (0.0)	5 (9.4)	0 (0.0)	3 (5.7)	0 (0.0)	45 (84.9)
Tidewater	210	2 (1.0)	4 (1.9)	5 (2.4)	124 (59.0)	0 (0.0)	75 (35.7)
Western Virginia	102	1 (1.0)	16 (15.7)	6 (5.9)	41 (40.2)	38 (37.3)	0 (0.0)
Out of State	8	7 (87.5)	1 (12.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	**1,256**	**20 (1.6)**	**116 (9.2)**	**16 (1.3)**	**517 (41.2)**	**145 (11.5)**	**442 (35.2)**

Trauma Emergency Responses

Trauma incidents are defined as those meeting the criteria outlined in the VDH Office of EMS quarterly report on trauma incidents. Step 1, 2, and 3 trauma incidents are defined as those meeting the Virginia Field Trauma Triage Decision Scheme. Of the 191,295 emergency response incidents reported by EMS during the fourth quarter of 2024, 27,330 (14.3%) trauma incidents were identified; 17 (0.1%) of the trauma patients were noted to be in cardiac arrest. In addition, a total of 88 (0.3%) of the 27,330 trauma patients were noted to be part of a mass casualty incident (MCI). Of the 27,225 patients not in cardiac arrest or part of an MCI, a total of 1,813 (6.7%) Step 1 patients, 260 (1.0%) Step 2 patients, 457 (1.7%) Step 3 patients, and 24,695 (90.7%) patients not meeting step criteria were noted. Details on the transport of Step 1, 2, and 3 trauma patients who were not in cardiac arrest and not part of an MCI can be found in Tables 10—12.

Table 10. Emergency Responses Among non-MCI Step 1 Trauma Patients Not in Cardiac Arrest Transported to a Level 1/Pediatric or Level 2 Trauma Center by EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Number Trauma Patients	Number (% Across) of Patients Transported to Level 1 Trauma Center	Number (% Across) of Patients Transported to Level 2 Trauma Center
Blue Ridge	72	12 (16.7)	56 (77.8)
Central Shenandoah	63	3 (4.8)	0 (0.0)
Lord Fairfax	49	1 (2.0)	31 (63.3)
Northern Virginia	354	148 (41.8)	78 (22.0)
Old Dominion	419	219 (52.3)	41 (9.8)
Peninsulas	113	7 (6.2)	68 (60.2)
Rappahannock	114	5 (4.4)	71 (62.3)
Southwest Virginia	86	3 (3.5)	0 (0.0)
Thomas Jefferson	58	48 (82.8)	0 (0.0)
Tidewater	308	108 (35.1)	17 (5.5)
Western Virginia	173	75 (43.4)	13 (7.5)
Out of State	4	4 (100.0)	0 (0.0)
Total	**1,813**	**633 (34.9)**	**375 (20.7)**

Table 11. Emergency Responses Among non-MCI Step 2 Trauma Patients Not in Cardiac Arrest Transported to a Level 1/Pediatric or Level 2 Trauma Center by EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Number Trauma Patients	Number (% Across) of Patients Transported to Level 1 Trauma Center	Number (% Across) of Patients Transported to Level 2 Trauma Center
Blue Ridge	1	1 (100.0)	0 (0.0)
Central Shenandoah	7	2 (28.6)	0 (0.0)
Lord Fairfax	2	0 (0.0)	2 (100.0)
Northern Virginia	44	22 (50.0)	5 (11.4)
Old Dominion	80	72 (90.0)	1 (1.3)
Peninsulas	3	0 (0.0)	3 (100.0)
Rappahannock	18	1 (5.6)	15 (83.3)
Southwest Virginia	18	3 (16.7)	0 (0.0)
Thomas Jefferson	10	8 (80.0)	0 (0.0)
Tidewater	52	31 (59.6)	4 (7.7)
Western Virginia	24	9 (37.5)	0 (0.0)
Out of State	1	0 (0.0)	0 (0.0)
Total	**260**	**149 (57.3)**	**30 (11.5)**

Table 12. Emergency Responses Among non-MCI Step 3 Trauma Patients Not in Cardiac Arrest Transported to a Level 1/Pediatric, Level 2, or Level 3 Trauma Center by EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Number Trauma Patients	Number (% Across) of Patients Transported to Level 1 Trauma Center	Number (% Across) of Patients Transported to Level 2 Trauma Center	Number (% Across) of Patients Transported to Level 3 Trauma Center
Blue Ridge	11	4 (36.4)	7 (63.6)	0 (0.0)
Central Shenandoah	12	0 (0.0)	0 (0.0)	0 (0.0)
Lord Fairfax	1	0 (0.0)	0 (0.0)	0 (0.0)
Northern Virginia	79	39 (49.4)	10 (12.7)	22 (27.8)
Old Dominion	99	71 (71.7)	6 (6.1)	9 (9.1)
Peninsulas	24	3 (12.5)	18 (75.0)	0 (0.0)
Rappahannock	36	1 (2.8)	30 (83.3)	0 (0.0)
Southwest Virginia	25	1 (4.0)	0 (0.0)	6 (24.0)
Thomas Jefferson	6	4 (66.7)	0 (0.0)	0 (0.0)
Tidewater	126	61 (48.4)	2 (1.6)	56 (44.4)
Western Virginia	34	6 (17.6)	1 (2.9)	10 (29.4)
Out of State	4	2 (50.0)	0 (0.0)	0 (0.0)
Total	**457**	**192 (42.0)**	**74 (16.2)**	**103 (22.5)**

Pain Emergency Responses

Pain incidents are defined as those with documented pain scale scores between 4 and 10. Patients with a primary impression of chest pain are excluded.

Pain Scale Score 4—6

Of the 191,295 emergency response incidents reported by EMS during the fourth quarter of 2024, 22,722 (11.9%) incidents occurred among patients with a pain score of 4—6. For 18,624 (82.0%) of the incidents, an ALS-level crew member was involved in the response, while 4,098 (18.0%) incidents involved only BLS-level crew members. Among ALS-level incidents, 1,985 (10.7%) involved administration of an analgesic, while 40 (1.0%) BLS-level incidents documented analgesic administration, for a total of 2,025 patients who received an analgesic (additional details provided in Tables 13—15). By age group, 112 (0.5%) incidents occurred among patients younger than 5 years of age, 310 (1.4%) incidents occurred among patients 5—12 years of age, 484 (2.1%) incidents occurred among patients 13—17 years of age, 1,549 (6.8%) incidents occurred among patients 18—24 years of age, 10,382 (45.7%) incidents occurred among patients 25—64 years of age, 9,882 (43.5%) incidents occurred among patients 65 years of age and older, and 3 (<0.1%) incidents occurred in patients whose age was not documented.

Crew Member Level Data Quality (Pain Scale Score 4—6)

The NEMSIS v3.5 data fields Crew Member Level (eCrew.02) and Level of Care Provided per Protocol (eDisposition.32) both capture information on the level of care provided to a patient by the responding unit. Crew Member Level reflects the functioning levels of the crew members during the EMS patient encounter and Level of Care Provided per Protocol reflects the general level of care provided to a patient as defined per provider level in local EMS protocols or clinical guidelines. In defining the methodology to analyze ALS and BLS incidents in this and subsequent sections, it is worthwhile to evaluate the alignment of these two fields.

According to Crew Member Level (eCrew.02), there were 18,624 (82.0%) incidents with at least one ALS-level crew member and 4,098 (18.0%) incidents with only BLS-level crew members involved in the response. In contrast, according to Level of Care Provided per Protocol (eDisposition.32), 12,741 (56.1%) incidents involved an ALS-level protocol, 9,729 (42.8%) incidents involved a BLS-level protocol, and 252 (1.1%) records reported some other protocol documentation (i.e., No Care Provided, EMS and Other Health-Care Staff, Critical Care, blank).

Of the 18,624 incidents with an ALS-level crew member (eCrew.02), 12,504 (67.1%) documented ALS-level protocols (eDisposition.32) whereas 5,880 (31.6%) documented only BLS-level protocols. The remaining 240 (1.2%) incidents with an ALS-level crew member reported some other protocol documentation. Among the 12,504 incidents with alignment between the ALS-level crew member and ALS-level protocols, 1,812 (14.5%) documented analgesic administration. In contrast, among the 5,880 incidents with an ALS-level crew member and only BLS-protocols, only 58 (1.0%) documented analgesic administration. These discrepancies suggest data quality concerns may exist between the two fields. However, there may be specific reasons for misalignment between the level of care able to be provided by crew members present on scene and the level of care provided per protocol, such as available resources, drive times, or other factors impacting patient care. This should be taken into consideration when evaluating the subsequent analyses, which utilize Crew Member Level (eCrew.02) to define ALS and BLS incidents.

Narrative Review (Pain Scale Score 4—6)

Of the 16,639 incidents involving ALS-level crew members that occurred among patients with a pain score of 4—6 without analgesic administration or a pertinent negative documented, 25 incidents were randomly selected for narrative review. None of the 25 records had analgesic administration or a pertinent negative documented in the narrative.

Table 13. Emergency Responses Among Patients with a Pain Score of 4—6 and Analgesic Administration* by Age Group and Crew Member Level, Fourth Quarter 2024, Virginia

Age Group	Incidents Involving an ALS-Level Crew Member		Incidents Involving Only BLS-Level Crew Members	
	Number of Pain Patients	**Number (Percent) of Patients Receiving an Analgesic**	**Number of Pain Patients**	**Number (Percent) of Patients Receiving an Analgesic**
0-4 years	90	8 (8.9)	22	0 (0.0)
5–12 years	249	28 (11.2)	61	0 (0.0)
13–17 years	380	78 (20.5)	104	2 (1.9)
18—24 years	1,235	140 (11.3)	314	2 (0.6)
25—64 years	8,662	936 (10.8)	1,720	18 (1.0)
65+ years	8,006	794 (9.9)	1,876	18 (1.0)
Unknown	2	1 (50.0)	1	0 (0.0)
Total	**18,624**	**1,985 (10.7)**	**4,098**	**40 (1.0)**

*Includes documentation of medication administration or relevant pertinent negative.

Table 14. Emergency Responses Among Patients with Pain Score of 4—6 and Analgesic Administration* by EMS Regional Council and Crew Member Level, Fourth Quarter 2024, Virginia

EMS Regional Council	Incidents Involving an ALS-Level Crew Member		Incidents Involving Only BLS-Level Crew Members	
	Number Pain Patients	Number (Percent) of Patients Receiving an Analgesic	Number of Pain Patients	Number (Percent) of Patients Receiving an Analgesic
Blue Ridge	1,304	136 (10.4)	49	4 (8.2)
Central Shenandoah	727	100 (13.8)	137	2 (1.5)
Lord Fairfax	392	36 (9.2)	114	3 (2.6)
Northern Virginia	2,737	284 (10.4)	1,341	11 (0.8)
Old Dominion	3,585	295 (8.2)	987	8 (0.8)
Peninsulas	1,688	134 (7.9)	40	0 (0.0)
Rappahannock	1,297	266 (20.5)	273	0 (0.0)
Southwest Virginia	1,232	127 (10.3)	282	5 (1.8)
Thomas Jefferson	630	148 (23.5)	73	0 (0.0)
Tidewater	3,103	256 (8.3)	219	0 (0.0)
Western Virginia	1,912	196 (10.3)	583	7 (1.2)
Out of State	17	7 (41.2)	0	0 (0.0)
Total	**18,624**	**1,985 (10.7)**	**4,098**	**40 (1.0)**

*Includes documentation of medication administration or relevant pertinent negative.

Table 15. Analgesics Administered to Patients with Pain Score of 4—6, Fourth Quarter 2024, Virginia

Analgesic Administered	Number Analgesic Administrations†	Percent of Analgesics Administered
Acetaminophen/Tylenol	54	2.6
Dilaudid/Hydromorphone	3	0.1
Fentanyl	1,607	76.0
Ibuprofen/Motrin	6	0.3
Ketamine	80	3.8
Ketorolac/Toradol	178	8.4
Morphine	187	8.8
Total	**2,115**	**100.0**

†The number of analgesic administrations is higher than the number of patients receiving an analgesic, as patients may receive more than one medication during an incident.

Pain scale score 7—10

During the fourth quarter of 2024, 30,712 (16.1% of 191,295) incidents occurred among patients with a pain score between 7 and 10. For 23,712 (77.2%) of the incidents, an ALS-level crew member was involved in the response, while 7,000 (22.8%) incidents involved only BLS-level crew members. Among ALS-level incidents, 4,341 (18.3%) involved administration of an analgesic, while 91 (1.3%) BLS-level incidents documented analgesic administration, for a total of 4,432 patients who received an analgesic (additional details provided in Tables 16—18). By age group, 56 (0.2%) incidents occurred among patients younger than 5 years of age, 278 (0.9%) incidents occurred among patients 5—12 years of age, 558 (1.8%) incidents occurred among patients 13—17 years of age, 1,887 (6.1%) incidents occurred among patients 18—24 years of age, 16,588 (54.0%) incidents occurred among patients 25—64 years of age, 11,340 (36.9%) incidents occurred among patients 65 years of age and older, and 5 (<0.1%) incidents occurred in patients whose age was not documented.

Crew Member Level Data Quality (Pain Scale Score 7—10)

The NEMSIS v3.5 data fields Crew Member Level (eCrew.02) and Level of Care Provided per Protocol (eDisposition.32) both capture information on the level of care provided to a patient by the responding unit. Crew Member Level reflects the functioning levels of the crew members during the EMS patient encounter and Level of Care Provided per Protocol reflects the general level of care provided to a patient as defined per provider level in local EMS protocols or clinical guidelines. In defining the methodology to analyze ALS and BLS incidents in this and subsequent sections, it is worthwhile to evaluate the alignment of these two fields.

According to Crew Member Level (eCrew.02), there were 23,712 (77.2%) incidents with at least one ALS-level crew member and 7,000 (22.8%) incidents with only BLS-level crew members involved in the response. In contrast, according to Level of Care Provided per Protocol (eDisposition.32), 15,834 (51.6%) incidents involved an ALS-level protocol, 14,603 (47.5%) incidents involved a BLS-level protocol, and 275 (0.9%) records reported some other protocol documentation (i.e., No Care Provided, EMS and Other Health-Care Staff, Integrated Health Care, Critical Care, blank).

Of the 23,712 incidents with an ALS-level crew member (eCrew.02), 15,445 (65.1%) documented ALS-level protocols (eDisposition.32) whereas 8,011 (33.8%) documented only BLS-level protocols. The remaining 256 (1.1%) incidents with an ALS-level crew member reported some other protocol documentation. Among the 15,445 incidents with alignment between the ALS-level crew member and ALS-level protocols, 4,058 (26.3%) documented analgesic administration. In contrast, among the 8,011 incidents with an ALS-level crew member and only BLS-protocols, only 155 (1.9%) documented analgesic administration. These discrepancies suggest data quality concerns may exist between the two fields. However, there may be specific reasons for misalignment between the level of care able to be provided by crew members present on scene and the level of care provided per protocol, such as available resources, drive times, or other factors impacting patient care. This should be taken into consideration when evaluating the subsequent analyses, which utilize Crew Member Level (eCrew.02) to define ALS and BLS incidents.

Narrative Review (Pain Scale Score 7—10)

Of the 19,371 incidents involving ALS-level crew members that occurred among patients with a pain score of 7—10 without analgesic administration or a pertinent negative documented, 25 incidents were randomly selected for narrative review. For one (4.0%) of the records, an analgesic was noted in the patient's current medication list, without indication of whether the patient had taken the medication that day. One (4.0%) additional record noted administration of an analgesic prior to the arrival of EMS. None of the 23 (92.0%) other records had analgesic administration or a pertinent negative documented in the narrative.

Table 16. Emergency Responses Among Patients with Pain Score of 7—10 and Analgesic Administration* by Age Group and Crew Member Level, Fourth Quarter 2024, Virginia

Age Group	Incidents Involving an ALS-Level Crew Member		Incidents Involving Only BLS-Level Crew Members	
	Number Pain Patients	**Number (Percent) of Patients Receiving an Analgesic**	**Number of Pain Patients**	**Number (Percent) of Patients Receiving an Analgesic**
0—4 years	45	7 (15.6)	11	0 (0.0)
5–12 years	216	59 (27.3)	62	2 (3.2)
13–17 years	427	140 (32.8)	131	7 (5.3)
18—24 years	1,467	317 (21.6)	420	4 (1.0)
25—64 years	12,917	2,213 (17.1)	3,671	29 (0.8)
65 years and older	8,635	1,602 (18.6)	2,705	49 (1.8)
Unknown	5	3 (60.0)	0	0 (0.0)
Total	**23,712**	**4,341 (18.3)**	**7,000**	**91 (1.3)**

*Includes documentation of medication administration or relevant pertinent negative.

Table 17. Emergency Responses Among Patients with Pain Score of 7—10 and Analgesic Administration* by EMS Regional Council and Crew Member Level, Fourth Quarter 2024, Virginia

EMS Regional Council	Incidents Involving an ALS-Level Crew Member		Incidents Involving Only BLS-Level Crew Members	
	Number Pain Patients	Number (Percent) of Patients Receiving an Analgesic	Number of Pain Patients	Number (Percent) of Patients Receiving an Analgesic
Blue Ridge	1,232	320 (26.0)	88	9 (10.2)
Central Shenandoah	922	226 (24.5)	294	3 (1.0)
Lord Fairfax	674	74 (11.0)	268	3 (1.1)
Northern Virginia	2,720	684 (25.1)	1,899	38 (2.0)
Old Dominion	5,850	677 (11.6)	2,119	13 (0.6)
Peninsulas	2,420	325 (13.4)	55	2 (3.6)
Rappahannock	1,399	537 (38.4)	294	3 (1.0)
Southwest Virginia	1,323	217 (16.4)	405	12 (3.0)
Thomas Jefferson	863	241 (27.9)	209	0 (0.0)
Tidewater	4,029	634 (15.7)	468	0 (0.0)
Western Virginia	2,258	397 (17.6)	900	8 (0.9)
Out of State	22	9 (40.9)	1	0 (0.0)
Total	**23,712**	**4,431 (18.3)**	**7,000**	**91 (1.3)**

*Includes documentation of medication administration or relevant pertinent negative.

Table 18. Analgesics Administered to Patients with Pain Score of 7—10, Fourth Quarter 2024, Virginia

Analgesic Administered	Number Analgesic Administrations†	Percent of Analgesics Administered
Acetaminophen/Tylenol	79	1.7
Dilaudid/Hydromorphone	5	0.1
Fentanyl	3,515	75.6
Ibuprofen/Motrin	9	0.2
Ketamine	203	4.4
Ketorolac/Toradol	374	8.0
Morphine	467	10.0
Total	**4,652**	**100.0**

†The number of analgesic administrations is higher than the number of patients receiving an analgesic, as patients may receive more than one medication during an incident.

Pediatric (<15 Years) Pain Emergency Responses

During the fourth quarter of 2024, 1,011 incidents with a recorded pain score between 4 and 10 were identified among patients younger than 15 years of age. For 791 (78.2%) of the incidents, an ALS-level crew member was involved in the response, while 220 (21.8%) incidents involved only BLS-level crew members. Among ALS-level incidents, 133 (16.8%) involved administration of an analgesic, while 3 (1.4%) BLS-level incidents documented analgesic administration, for a total of 136 patients who received an analgesic (additional details provided in Tables 19—20).

Table 19. Emergency Responses Among Pediatric Patients with Pain Score of 4—10 and Analgesic Administration* by EMS Regional Council and Crew Member Level, Fourth Quarter 2024, Virginia

EMS Regional Council	Incidents Involving an ALS-Level Crew Member		Incidents Involving Only BLS-Level Crew Members	
	Number Pediatric Pain Patients	Number (Percent) of Patients Receiving an Analgesic	Number Pediatric Pain Patients	Number (Percent) of Patients Receiving an Analgesic
Blue Ridge	33	6 (18.2)	2	0 (0.0)
Central Shenandoah	22	6 (27.3)	6	1 (16.7)
Lord Fairfax	20	2 (10.0)	7	0 (0.0)
Northern Virginia	170	43 (25.3)	75	1 (1.3)
Old Dominion	193	16 (8.3)	60	0 (0.0)
Peninsulas	60	7 (11.7)	1	0 (0.0)
Rappahannock	59	17 (28.8)	18	1 (5.6)
Southwest Virginia	19	2 (10.5)	8	0 (0.0)
Thomas Jefferson	23	8 (34.8)	8	0 (0.0)
Tidewater	126	19 (15.1)	15	0 (0.0)
Western Virginia	66	7 (10.6)	20	0 (0.0)
Out of State	0	0 (0.0)	0	0 (0.0)
Total	**791**	**133 (16.8)**	**220**	**3 (1.4)**

*Includes documentation of medication administration or relevant pertinent negative.

Table 20. Analgesics Administered to Pediatric Patients with Pain Score of 4—10, Fourth Quarter 2024, Virginia

Analgesic Administered	Number Analgesic Administrations†	Percent of Analgesics Administered
Acetaminophen/Tylenol	6	4.2
Dilaudid/Hydromorphone	0	0.0
Fentanyl	120	84.5
Ibuprofen/Motrin	2	1.4
Ketamine	2	1.4
Ketorolac/Toradol	5	3.5
Morphine	7	4.9
Total	**142**	**100.0**

†The number of analgesic administrations is higher than the number of patients receiving an analgesic, as patients may receive more than one medication during an incident.

Asthma Emergency Responses

Asthma incidents are defined as those with a primary impression that includes the words "asthma" or "reactive airway" or with a protocol that includes the word "asthma". Patients with a primary impression of chronic obstructive pulmonary disease are excluded. Of the 191,295 emergency response incidents reported by EMS during the fourth quarter of 2024, 2,208 (1.2%) asthma incidents were identified. For 2,010 (91.0%) of the incidents, an ALS-level crew member was involved in the response, while 198 (9.0%) incidents involved only BLS-level crew members. By age group, 33 (1.5%) incidents occurred among patients younger than two years of age, 255 (11.5%) incidents occurred among patients 2 – 17 years of age, and 1,920 (87.0%) incidents occurred among patients 18 years of age or older. A total of 838 (38.0%) incidents had no steroid, magnesium, or Albuterol/ipratropium administration documented, while 1,370 (62.0%) incidents reported administration of at least one of the three medications or had a pertinent negative documented (additional details provided in Tables 21 – 26). Among ALS-level incidents, 723 had no steroid, magnesium, or Albuterol/ipratropium administration documented, while 115 BLS-level incidents had no steroid, magnesium, or Albuterol/ipratropium administration documented (additional details provided in Tables 23—26).

Narrative Review

Of the 723 asthma incidents involving ALS-level crew members that occurred among patients without steroid, magnesium, or Albuterol/ipratropium administration or a pertinent negative documented, 25 incidents were randomly selected for narrative review. In three records (12.0%), use of a nebulizer/breathing treatment was noted in the narrative, with no detail provided on what medication was administered. Two (8.0%) narratives indicated Albuterol and/or DuoNeb was administered prior to arrival of EMS. The remaining 20 (80.0%) records did not have medication administration or a pertinent negative documented in the narrative.

Table 21. Emergency Responses Among Asthma Patients with Albuterol/Ipratropium Administration* by Age Group, Fourth Quarter 2024, Virginia

Age Group	Number Asthma Patients	Number of Patients Receiving Albuterol/ Ipratropium	Percent With Albuterol/ Ipratropium Administration Documented	Percent Without Albuterol/Ipratropium Administration Documented
< 2 years	33	14	42.4	57.6
2 – 17 years	255	171	67.1	32.9
18 and older	1,920	1,166	60.7	39.3
Total	**2,208**	**1,351**	**61.2**	**38.8**

*Includes documentation of medication administration or relevant pertinent negative.

Table 22. Emergency Responses Among Asthma Patients with Albuterol/Ipratropium Administration* by EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Number Asthma Patients	Number of Patients Receiving Albuterol/ Ipratropium	Percent With Albuterol/ Ipratropium Administration Documented	Percent Without Albuterol/ Ipratropium Administration Documented
Blue Ridge	47	37	78.7	21.3
Central Shenandoah	70	42	60.0	40.0
Lord Fairfax	28	22	78.6	21.4
Northern Virginia	183	122	66.7	33.3
Old Dominion	331	239	72.2	27.8
Peninsulas	215	162	75.3	24.7
Rappahannock	196	110	56.1	43.9
Southwest Virginia	229	97	42.4	57.6
Thomas Jefferson	73	55	75.3	24.7
Tidewater	555	309	55.7	44.3
Western Virginia	275	153	55.6	44.4
Out of State	6	3	50.0	50.0
Total	**2,208**	**1,351**	**61.2**	**38.8**

*Includes documentation of medication administration or relevant pertinent negative.

Table 23. Emergency Responses Among Asthma Patients with Steroid Administration* by Age Group and Crew Member Level, Fourth Quarter 2024, Virginia

Age Group	*Incidents Involving an ALS-Level Crew Member*		*Incidents Involving Only BLS-Level Crew Members*	
	Number Asthma Patients	Number (Percent) Patients Receiving a Steroid	Number Asthma Patients	Number (Percent) Patients Receiving a Steroid
< 2 years	29	1 (3.4)	4	0 (0.0)
2 – 17 years	233	25 (10.7)	22	0 (0.0)
18 and older	1,748	421 (24.1)	172	5 (2.9)
Total	**2,010**	**447 (22.2)**	**198**	**5 (2.5)**

*Includes documentation of medication administration or relevant pertinent negative.

Table 24. Emergency Responses Among Asthma Patients with Steroid Administration* by EMS Regional Council and Crew Member Level, Fourth Quarter 2024, Virginia

EMS Regional Council	Incidents Involving an ALS-Level Crew Member		Incidents Involving Only BLS-Level Crew Members	
	Number Asthma Patients	Number (Percent) Patients Receiving a Steroid	Number Asthma Patients	Number (Percent) Patients Receiving a Steroid
Blue Ridge	44	20 (45.5)	3	1 (33.3)
Central Shenandoah	54	21 (38.9)	16	0 (0.0)
Lord Fairfax	28	15 (53.6)	0	0 (0.0)
Northern Virginia	168	30 (17.9)	15	1 (6.7)
Old Dominion	289	77 (26.6)	42	1 (2.4)
Peninsulas	213	74 (34.7)	2	0 (0.0)
Rappahannock	169	31 (18.3)	27	0 (0.0)
Southwest Virginia	199	33 (16.6)	30	0 (0.0)
Thomas Jefferson	67	15 (22.4)	6	0 (0.0)
Tidewater	530	71 (13.4)	25	0 (0.0)
Western Virginia	243	59 (24.3)	32	2 (6.3)
Out of State	6	1 (16.7)	0	0 (0.0)
Total	**2,010**	**447 (22.2)**	**198**	**5 (2.5)**

*Includes documentation of medication administration or relevant pertinent negative.

Table 25. Emergency Responses Among Asthma Patients with Magnesium Administration* by Age Group and Crew Member Level, Fourth Quarter 2024, Virginia

Age Group	Incidents Involving an ALS-Level Crew Member		Incidents Involving Only BLS-Level Crew Members	
	Number Asthma Patients	Number (Percent) Patients Receiving Magnesium	Number Asthma Patients	Number (Percent) Patients Receiving Magnesium
< 2 years	29	0 (0.0)	4	0 (0.0)
2 – 17 years	233	4 (1.7)	22	0 (0.0)
18 and older	1,748	90 (5.1)	172	0 (0.0)
Total	**2,010**	**94 (4.7)**	**198**	**0 (0.0)**

*Includes documentation of medication administration or relevant pertinent negative.

Table 26. Emergency Responses Among Asthma Patients with Magnesium Administration* by EMS Regional Council, Fourth Quarter 2024, Virginia

EMS Regional Council	Incidents Involving an ALS-Level Crew Member		Incidents Involving Only BLS-Level Crew Members	
	Number Asthma Patients	Number (Percent) Patients Receiving Magnesium	Number Asthma Patients	Number (Percent) Patients Receiving Magnesium
Blue Ridge	44	7 (15.9)	3	0 (0.0)
Central Shenandoah	54	1 (1.9)	16	0 (0.0)
Lord Fairfax	28	1 (3.6)	0	0 (0.0)
Northern Virginia	168	6 (3.6)	15	0 (0.0)
Old Dominion	289	12 (4.2)	42	0 (0.0)
Peninsulas	213	11 (5.2)	2	0 (0.0)
Rappahannock	169	1 (0.6)	27	0 (0.0)
Southwest Virginia	199	1 (0.5)	30	0 (0.0)
Thomas Jefferson	67	0 (0.0)	6	0 (0.0)
Tidewater	530	47 (8.9)	25	0 (0.0)
Western Virginia	243	7 (2.9)	32	0 (0.0)
Out of State	6	0 (0.0)	0	0 (0.0)
Total	**2,010**	**94 (4.7)**	**198**	**0 (0.0)**

*Includes documentation of medication administration or relevant pertinent negative.