Virginia Department of Health

Office of Emergency Medical Services (OEMS)

Quarterly Report on EMS Incidents

Q1 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 1 2024 data for this report was collected from the ESO Pre-hospital Data System (NEMSIS version 3.4 and 3.5) on June 10, 2024. Importantly, many records submitted by Virginia EMS agencies for incidents occurring during the first 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, First Quarter, 2024, Virginia

Month	Total Failed Records
January	7,455
February	4,738
March	5,475

Virginia EMS Call Summary, First Quarter, 2024

EMS agencies in Virginia responded to a total of 426,651 EMS calls during the first quarter of 2024 (see Tables 2—5 and Figure 1).

Table 2. Number of EMS Incidents by Type of Service Requested and Disposition, First 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	
Assist (Agency, Public, or Unit)	26,573	33	84	65	95	1,618	49	**28,517**
Canceled (Prior to Arrival at Scene or On Scene)	48,866	50	1,329	1,361	320	605	206	**52,737**
Patient Dead at Scene (with and without resucitation; with and without transport)	3,612	2	29	18	9	16	0	**3,686**
Patient Evaluated, No Treatment/Transport Required	3,811	4	15	23	9	90	9	**3,961**
Patient Refused Evaluation/Care (with or without transport)	23,278	40	48	87	46	200	14	**23,713**
Patient Treated, Released (AMA or per protocol)	16,799	21	38	158	29	228	45	**17,318**
Patient Treated, Transferred Care to Another EMS Unit	10,215	10	68	50	72	131	22	**10,568**
Patient Treated, Transported by Law Enforcement	257	0	0	0	1	0	1	**259**
Patient Treated, Transported by Private Vehicle	217	0	1	2	0	3	0	**223**
Patient Treated, Transported by this Unit	183,981	338	35,884	56,597	364	854	35	**278,053**
Standby (no services/support provided or public safety, fire, or EMS operational support provided)	5,935	9	83	64	45	413	822	**7,371**
Transport Non-Patient, Organs, etc.	1	0	22	122	0	9	9	**163**
Blank	35	0	15	24	4	4	0	**82**
Total	**323,580**	**507**	**37,616**	**58,571**	**994**	**4,171**	**1,212**	**426,651**

Table 3. Number of EMS Incidents by Type of Service Requested and Age Group, First 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)	4,837	4,029	5,144	13,760	104,004	114,139	77,667	**323,580**
Intercept/ Rendezvous	9	5	9	33	207	164	80	**507**
Interfacility Transport	1,186	858	960	1,196	13,816	18,896	704	**37,616**
Medical Transport	354	279	446	466	14,347	41,855	824	**58,571**
Mutual Aid	15	13	8	28	244	256	430	**994**
Public Assistance/ Other Not Listed	26	9	23	63	687	1,278	2,085	**4,171**
Standby	3	4	8	28	77	31	1,061	**1,212**
Total	**6,430**	**5,197**	**6,598**	**15,574**	**133,382**	**176,619**	**82,851**	**426,651**

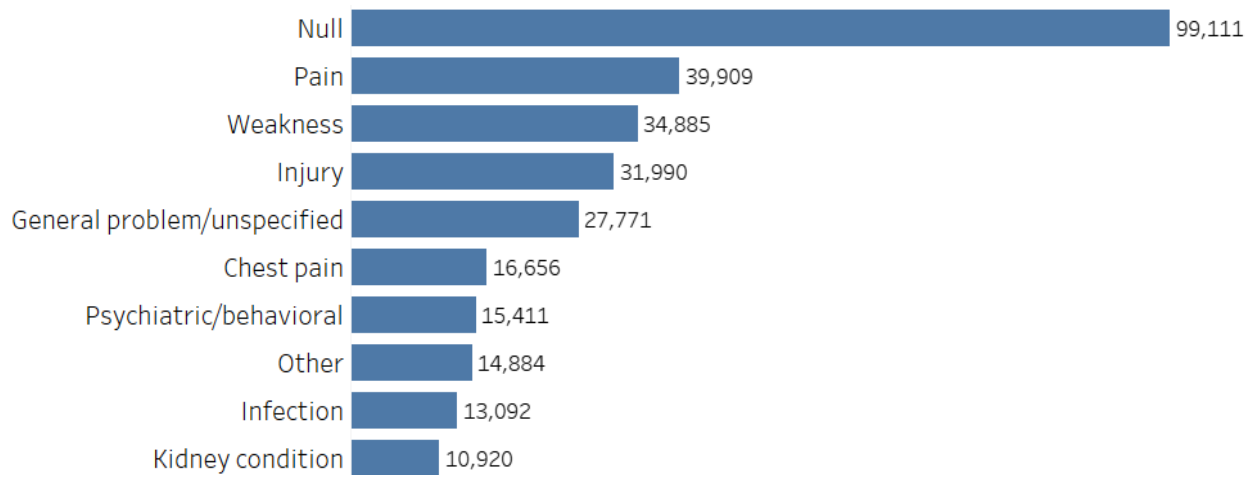
Table 4. Number of EMS Incidents by Patient Disposition and Age Group, First Quarter, 2024, Virginia

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)	137	103	117	272	2,191	3,549	22,148	**28,517**
Canceled (Prior to Arrival at Scene or On Scene)	26	20	35	69	719	1,175	50,693	**52,737**
Patient Dead at Scene (with and without resucitation; with and without transport)	12	3	16	73	1,384	2,131	67	**3,686**
Patient Evaluated, No Treatment/ Transport Required	220	130	132	326	1,598	1,538	17	**3,961**

Table 4 (continued). Number of EMS Incidents by Patient Disposition and Age Group, First 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)	749	642	727	1,877	9,355	8,100	2,263	**23,713**
Patient Treated, Released (AMA or per protocol)	568	574	684	1,426	7,693	6,334	39	**17,318**
Patient Treated, Transferred Care to Another EMS Unit	178	152	211	582	4,689	4,414	342	**10,568**
Patient Treated, Transported by Law Enforcement	0	4	10	37	184	21	3	**259**
Patient Treated, Transported by Private Vehicle	25	11	11	16	89	70	1	**223**
Patient Treated, Transported by this EMS Unit	4,499	3,553	4,647	10,879	105,335	149,072	68	**278,053**
Standby (no services/support provided or public safety, fire, or EMS operational support provided)	10	5	8	15	114	162	7,057	**7,371**
Transport Non-Patient, Organs, etc.	6	0	0	0	17	15	125	**163**
Blank	0	0	0	2	14	38	28	**82**
Total	**6,430**	**5,197**	**6,598**	**15,574**	**133,382**	**176,619**	**82,851**	**426,651**

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



Of the 426,651 total EMS calls that occurred during the first quarter of 2024, a total of 183,981 (43.1%) 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, First Quarter, 2024, Virginia

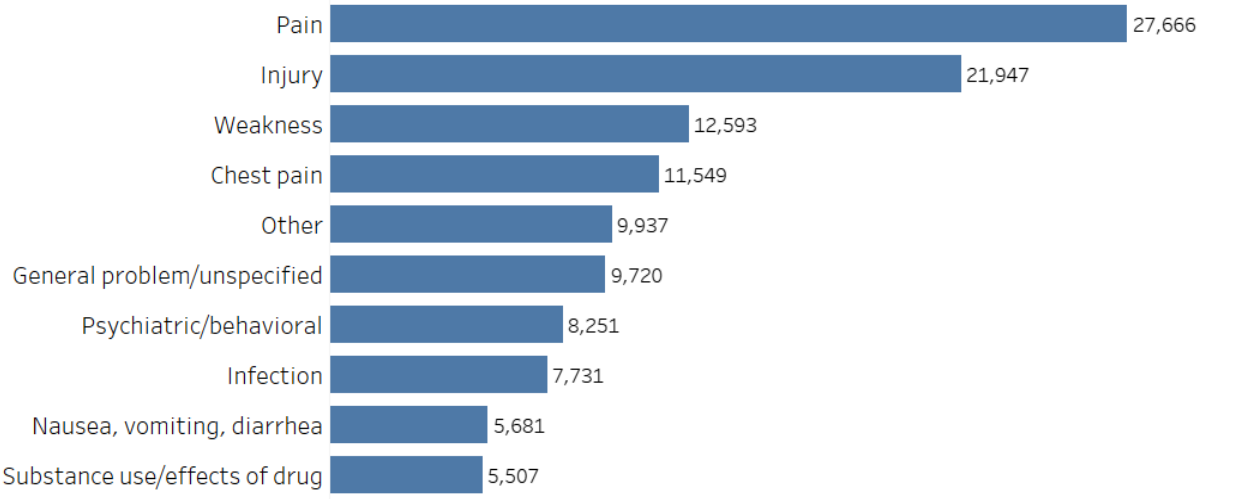


Table 5. Top 10 Primary Impressions for Emergency Responses by Patient Age Group, First Quarter, 2024, Virginia

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	Substance use/ effects of drug
2	General problem/ unspecified	Seizure/ convulsions	Psychiatric/ behavioral	Pain	Injury	Injury	Injury
3	Fever	Pain	Pain	Psychiatric/ behavioral	Chest pain	Weakness	Cardiac arrest
4	Injury* Infection*	General problem/ unspecified	Seizure/ convulsions	Substance use/ effects of drug	Psychiatric/ behavioral	Other	Pain
5		Infection	Substance use/ effects of drug	Seizure/ convulsions	Substance use/ effects of drug	General problem/ unspecified	Fluid in/around the lungs* Other* Psychiatric/ behavioral*

**Multiple Provider Primary Impressions were tied for the fourth and fifth most common impressions for patients 0—4 years of age, and for the fifth and sixth most common impressions for patients with an Unknown Age Group.

Table 5. Top 10 Primary Impressions for Emergency Responses by Patient Age Group, First Quarter, 2024, Virginia (continued)

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

*Multiple Provider Primary Impressions were tied for the fourth and fifth most common impressions for patients 0—4 years of age, and for the fifth and sixth most common impressions for patients with an Unknown Age Group.

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 183,981 emergency response incidents reported by EMS during the first quarter of 2024, 10,354 (5.6%) non-traumatic chest pain incidents were identified in patients 35 years of age and older. Of these, a total of 8,874 (85.7%) patients had 12-lead acquisition and 4,753 (45.9%) 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, First 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	454	396	87.2	12.8
Central Shenandoah	457	407	89.1	10.9
Lord Fairfax	341	325	95.3	4.7
Northern Virginia	1,611	1,238	76.8	23.2
Old Dominion	2,124	1,685	79.3	20.7
Peninsulas	818	748	91.4	8.6
Rappahannock	634	599	94.5	5.5
Southwest Virginia	588	468	79.6	20.4
Thomas Jefferson	424	393	92.7	7.3
Tidewater	1,729	1,571	90.9	9.1
Western Virginia	1,165	1,038	89.1	10.9
Out of State	9	6	66.7	33.3
Total	**10,354**	**8,874**	**85.7**	**14.3**

Table 7. Emergency Responses Among Non-Traumatic Chest Pain Patients ≥ 35 Years of Age with Aspirin Administration* by EMS Regional Council, First 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	454	190	41.9	58.1
Central Shenandoah	457	203	44.4	55.6
Lord Fairfax	341	161	47.2	52.8
Northern Virginia	1,611	657	40.8	59.2
Old Dominion	2,124	1,045	49.2	50.8
Peninsulas	818	411	50.2	49.8
Rappahannock	634	285	45.0	55.0
Southwest Virginia	588	274	46.6	53.4
Thomas Jefferson	424	236	55.7	44.3
Tidewater	1,729	832	48.1	51.9
Western Virginia	1,165	459	39.4	60.6
Out of State	9	0	0.0	100.0
Total	**10,354**	**4,753**	**45.9**	**54.1**

*Includes documentation of medication administration or relevant pertinent negative.

Narrative Review

Of the 5,601 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. Aspirin administration by EMS was documented in the narrative for 1 (4.0%) incident. For five (20.0%) patients, aspirin was administered prior to the arrival of EMS. One narrative (4.0%) noted aspirin was administered to the patient both prior to EMS arrival and by the EMS clinician. One (4.0%) narrative documented a reason for EMS not administering aspirin (i.e., chest pain was not thought to be cardiac in nature). The remaining 17 (68.0%) 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 183,981 emergency response incidents reported by EMS during the first quarter of 2024, 1,003 (0.5%) STEMI incidents were identified. Of these, 790 (78.8%) patients had 12-lead acquisition, with 763 (96.6%) records containing information on the time between arrival at patient and when an EKG was performed. Of these 763 records, time to receive an EKG ranged from 0 minutes to 1 hour and 18 minutes. It took a median of 7 minutes and 29 seconds and an average of 9 minutes and 29 seconds for the 763 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 183,981 emergency response incidents reported by EMS during the first quarter of 2024, 5,071 (2.8%) stroke incidents were identified. Of the stroke incidents, 4,007 (79.0%) documented the performance of a stroke scale or a pertinent negative, 4,740 (93.5%) had a blood glucose or pertinent negative recorded, and 5,037 (99.3%) had the date/time the patient was last known well or the date/time of the patient's symptom onset recorded. For 1,169 (23.1%) 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, First 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	233	0 (0.0)	14 (6.0)	0 (0.0)	3 (1.3)	216 (92.7)	0 (0.0)
Central Shenandoah	191	0 (0.0)	23 (12.0)	0 (0.0)	164 (85.9)	0 (0.0)	4 (2.1)
Lord Fairfax	121	0 (0.0)	16 (13.2)	0 (0.0)	105 (86.8)	0 (0.0)	0 (0.0)
Northern Virginia	855	3 (0.4)	48 (5.6)	16 (1.9)	381 (44.6)	162 (18.9)	245 (28.7)
Old Dominion	1,086	2 (0.2)	83 (7.6)	1 (0.1)	404 (37.2)	2 (0.2)	594 (54.7)
Peninsulas	361	0 (0.0)	14 (3.9)	0 (0.0)	123 (34.1)	0 (0.0)	224 (62.0)
Rappahannock	353	0 (0.0)	42 (11.9)	0 (0.0)	289 (81.9)	0 (0.0)	22 (6.2)
Southwest Virginia	248	56 (22.6)	141 (56.9)	0 (0.0)	47 (19.0)	4 (1.6)	0 (0.0)
Thomas Jefferson	182	0 (0.0)	6 (3.3)	0 (0.0)	14 (7.7)	3 (1.6)	159 (87.4)
Tidewater	903	5 (0.6)	29 (3.2)	36 (4.0)	558 (61.8)	0 (0.0)	275 (30.5)
Western Virginia	519	13 (2.5)	115 (22.2)	28 (5.4)	160 (30.8)	202 (38.9)	1 (0.2)
Out of State	19	17 (89.5)	0 (0.0)	0 (0.0)	0 (0.0)	2 (10.5)	0 (0.0)
Total	**5,071**	**96 (1.9)**	**531 (10.5)**	**81 (1.6)**	**2,248 (44.3)**	**591 (11.7)**	**1,524 (30.1)**

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, First 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	61	0 (0.0)	2 (3.3)	0 (0.0)	1 (1.6)	58 (95.1)	0 (0.0)
Central Shenandoah	39	0 (0.0)	4 (10.3)	0 (0.0)	33 (84.6)	0 (0.0)	2 (5.1)
Lord Fairfax	14	0 (0.0)	3 (21.4)	0 (0.0)	11 (78.6)	0 (0.0)	0 (0.0)
Northern Virginia	211	1 (0.5)	10 (4.7)	6 (2.8)	107 (50.7)	30 (14.2)	57 (27.0)
Old Dominion	242	0 (0.0)	20 (8.3)	0 (0.0)	80 (33.1)	0 (0.0)	142 (58.7)
Peninsulas	82	0 (0.0)	1 (1.2)	0 (0.0)	31 (37.8)	0 (0.0)	50 (61.0)
Rappahannock	69	0 (0.0)	8 (11.6)	0 (0.0)	57 (82.6)	0 (0.0)	4 (5.8)
Southwest Virginia	56	18 (32.1)	27 (48.2)	0 (0.0)	10 (17.9)	1 (1.8)	0 (0.0)
Thomas Jefferson	43	0 (0.0)	1 (2.3)	0 (0.0)	6 (14.0)	0 (0.0)	36 (83.7)
Tidewater	223	0 (0.0)	5 (2.2)	6 (2.7)	139 (62.3)	0 (0.0)	73 (32.7)
Western Virginia	123	6 (4.9)	20 (16.3)	5 (4.1)	41 (33.3)	50 (40.7)	1 (0.8)
Out of State	6	6 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	**1,169**	**31 (2.7)**	**101 (8.6)**	**17 (1.5)**	**516 (44.1)**	**139 (11.9)**	**365 (31.2)**

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 183,981 emergency response incidents reported by EMS during the first quarter of 2024, 23,334 (12.7%) trauma incidents were identified; 32 (0.1%) of the trauma patients were noted to be in cardiac arrest. In addition, a total of 76 (0.3%) of the 23,334 trauma patients were noted to be part of a mass casualty incident (MCI). Of the 23,226 patients not in cardiac arrest or part of an MCI, a total of 1,746 (7.5%) Step 1 patients, 312 (1.3%) Step 2 patients, 343 (1.5%) Step 3 patients, and 20,825 (89.7%) 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 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, First 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	69	10 (14.5)	53 (76.8)
Central Shenandoah	42	1 (2.4)	0 (0.0)
Lord Fairfax	43	0 (0.0)	25 (58.1)
Northern Virginia	409	188 (46.0)	63 (15.4)
Old Dominion	374	173 (46.3)	39 (10.4)
Peninsulas	112	4 (3.6)	58 (51.8)
Rappahannock	101	3 (3.0)	57 (56.4)
Southwest Virginia	73	5 (6.8)	0 (0.0)
Thomas Jefferson	61	51 (83.6)	0 (0.0)
Tidewater	283	110 (38.9)	4 (1.4)
Western Virginia	176	74 (42.0)	15 (8.5)
Out of State	3	0 (0.0)	0 (0.0)
Total	**1,746**	**619 (35.5)**	**314 (18.0)**

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, First 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	0 (0.0)	1 (100.0)
Central Shenandoah	6	1 (16.7)	0 (0.0)
Lord Fairfax	7	0 (0.0)	4 (57.1)
Northern Virginia	49	32 (65.3)	8 (16.3)
Old Dominion	95	72 (75.8)	9 (9.5)
Peninsulas	20	0 (0.0)	20 (100.0)
Rappahannock	10	2 (20.0)	7 (70.0)
Southwest Virginia	13	6 (46.2)	0 (0.0)
Thomas Jefferson	6	5 (83.3)	0 (0.0)
Tidewater	74	46 (62.2)	1 (1.4)
Western Virginia	30	15 (50.0)	1 (3.3)
Out of State	1	0 (0.0)	0 (0.0)
Total	**312**	**179 (57.4)**	**51 (16.3)**

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, First 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	4	0 (0.0)	4 (100.0)	0 (0.0)
Central Shenandoah	7	0 (0.0)	0 (0.0)	0 (0.0)
Lord Fairfax	15	0 (0.0)	1 (6.7)	0 (0.0)
Northern Virginia	57	30 (52.6)	12 (21.1)	10 (17.5)
Old Dominion	65	34 (52.3)	7 (10.8)	15 (23.1)
Peninsulas	17	1 (5.9)	12 (70.6)	0 (0.0)
Rappahannock	16	2 (12.5)	14 (87.5)	0 (0.0)
Southwest Virginia	20	0 (0.0)	0 (0.0)	5 (25.0)
Thomas Jefferson	4	3 (75.0)	1 (25.0)	0 (0.0)
Tidewater	101	51 (50.5)	0 (0.0)	35 (34.7)
Western Virginia	35	14 (40.0)	1 (2.9)	7 (20.0)
Out of State	2	0 (0.0)	0 (0.0)	0 (0.0)
Total	**343**	**135 (39.4)**	**52 (15.2)**	**72 (21.0)**

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 183,981 emergency response incidents reported by EMS during the first quarter of 2024, 21,212 (11.5%) incidents occurred among patients with a pain score of 4—6, with 1,831 (8.6%) patients receiving an analgesic (additional details provided in Tables 13—15). By age group, 97 (0.5%) incidents occurred among patients younger than 5 years of age, 264 (1.2%) incidents occurred among patients 5—12 years of age, 479 (2.3%) incidents occurred among patients 13—17 years of age, 1,387 (6.5%) incidents occurred among patients 18—24 years of age, 9,675 (45.6%) incidents occurred among patients 25—64 years of age, 9,307 (43.9%) incidents occurred among patients 65 years of age and older, and 3 (<0.1%) incidents occurred in patients whose age was not documented.

Narrative Review (Pain Scale Score 4—6)

Of the 19,381 incidents occurring 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. One narrative (4.0%) reported the patient experienced pain relief when using a fentanyl patch but did not indicate who administered the medication. The remaining 24 (96.0%) records did not have analgesic administration or a pertinent negative documented in the narrative.

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

Age Group	Number Pain Patients	Number of Patients Receiving an Analgesic	Percent With Analgesic Administration Documented	Percent Without Analgesic Administration Documented
0-4 years	97	6	6.2	93.8
5–12 years	264	19	7.2	92.8
13–17 years	479	68	14.2	85.8
18—24 years	1,387	150	10.8	89.2
25—64 years	9,675	873	9.0	91.0
65 years and older	9,307	715	7.7	92.3
Unknown	3	0	0.0	100.0
Total	**21,212**	**1,831**	**8.6**	**91.4**

*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, First Quarter 2024, Virginia

EMS Regional Council,	Number Pain Patients	Number of Patients Receiving an Analgesic	Percent With Analgesic Administration Documented	Percent Without Analgesic Administration Documented
Blue Ridge	1,115	133	11.9	88.1
Central Shenandoah	854	103	12.1	87.9
Lord Fairfax	408	27	6.6	93.4
Northern Virginia	4,351	294	6.8	93.2
Old Dominion	3,901	232	5.9	94.1
Peninsulas	1,839	124	6.7	93.3
Rappahannock	1,475	229	15.5	84.5
Southwest Virginia	1,325	132	10.0	90.0
Thomas Jefferson	610	106	17.4	82.6
Tidewater	3,074	238	7.7	92.3
Western Virginia	2,242	210	9.4	90.6
Out of State	18	3	16.7	83.3
Total	**21,212**	**1,831**	**8.6**	**91.4**

*Includes documentation of medication administration or relevant pertinent negative.

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

Analgesic Administered	Number Analgesic Administrations†	Percent of Analgesics Administered
Acetaminophen/Tylenol	51	2.7
Dilaudid/Hydromorphone	3	0.2
Fentanyl	1,458	75.8
Ibuprofen/Motrin	10	0.5
Ketamine	71	3.7
Ketorolac/Toradol	178	9.3
Morphine	153	8.0
Total	**1,924**	**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 first quarter of 2024, 29,783 incidents occurred among patients with a pain score between 7 and 10, with 3,907 (13.1%) patients receiving an analgesic (additional details provided in Tables 16—18). By age group, 57 (0.2%) incidents occurred among patients younger than 5 years of age, 250 (0.8%) incidents occurred among patients 5—12 years of age, 492 (1.7%) incidents occurred among patients 13—17 years of age, 1,954 (6.6%) incidents occurred among patients 18—24 years of age, 16,142 (54.2%) incidents occurred among patients 25—64 years of age, 10,885 (36.5%) incidents occurred among patients 65 years of age and older, and 3 (<0.1%) incidents occurred in patients whose age was not documented.

Narrative Review (Pain Scale Score 7—10)

Of the 25,876 incidents occurring 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. One incident (4.0%) documented analgesic administration prior to EMS arrival in the narrative. Receipt of analgesic was ambiguous for one patient (4.0%), as the narrative indicated Tylenol had not been helping with pain management but did not specifically indicate when or by whom Tylenol was administered. The remaining 23 (92.0%) records did not have 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, First Quarter 2024, Virginia

Age Group	Number Pain Patients	Number of Patients Receiving an Analgesic	Percent With Analgesic Administration Documented	Percent Without Analgesic Administration Documented
0—4 years	57	10	17.5	82.5
5–12 years	250	42	16.8	83.2
13–17 years	492	112	22.8	77.2
18—24 years	1,954	296	15.1	84.9
25—64 years	16,142	2,032	12.6	87.4
65 years and older	10,885	1,414	13.0	87.0
Unknown	3	1	33.3	66.7
Total	**29,783**	**3,907**	**13.1**	**86.9**

*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, First Quarter 2024, Virginia

EMS Regional Council	Number Pain Patients	Number of Patients Receiving an Analgesic	Percent With Analgesic Administration Documented	Percent Without Analgesic Administration Documented
Blue Ridge	1,058	232	21.9	78.1
Central Shenandoah	1,247	214	17.2	82.8
Lord Fairfax	910	74	8.1	91.9
Northern Virginia	4,894	712	14.5	85.5
Old Dominion	7,337	544	7.4	92.6
Peninsulas	2,761	301	10.9	89.1
Rappahannock	1,593	454	28.5	71.5
Southwest Virginia	1,432	204	14.2	85.8
Thomas Jefferson	944	217	23.0	77.0
Tidewater	4,465	547	12.3	87.7
Western Virginia	3,121	406	13.0	87.0
Out of State	21	2	9.5	90.5
Total	**29,783**	**3,907**	**13.1**	**86.9**

*Includes documentation of medication administration or relevant pertinent negative.

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

Analgesic Administered	Number Analgesic Administrations†	Percent of Analgesics Administered
Acetaminophen/Tylenol	71	1.7
Dilaudid/Hydromorphone	1	<0.1
Fentanyl	3,177	77.7
Ibuprofen/Motrin	14	0.3
Ketamine	167	4.1
Ketorolac/Toradol	362	8.9
Morphine	296	7.2
Total	**4,088**	**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 first quarter of 2024, 893 incidents with a recorded pain score between 4 and 10 were identified among patients younger than 15 years of age, with 108 (12.1%) patients receiving 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, First Quarter 2024, Virginia

EMS Regional Council	Number Pediatric Pain Patients	Number of Patients Receiving an Analgesic	Percent With Analgesic Administration Documented	Percent Without Analgesic Administration Documented
Blue Ridge	34	10	29.4	70.6
Central Shenandoah	30	7	23.3	76.7
Lord Fairfax	19	1	5.3	94.7
Northern Virginia	250	34	13.6	86.4
Old Dominion	191	15	7.9	92.1
Peninsulas	62	5	8.1	91.9
Rappahannock	79	5	6.3	93.7
Southwest Virginia	15	2	13.3	86.7
Thomas Jefferson	26	2	7.7	92.3
Tidewater	109	14	12.8	87.2
Western Virginia	78	13	16.7	83.3
Out of State	0	0	0.0	0.0
Total	**893**	**108**	**12.1**	**87.9**

*Includes documentation of medication administration or relevant pertinent negative.

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

Analgesic Administered	Number Analgesic Administrations†	Percent of Analgesics Administered
Acetaminophen/Tylenol	7	6.3
Dilaudid/Hydromorphone	0	0.0
Fentanyl	89	80.2
Ibuprofen/Motrin	1	0.9
Ketamine	4	3.6
Ketorolac/Toradol	2	1.8
Morphine	8	7.2
Total	**111**	**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 183,981 emergency response incidents reported by EMS during the first quarter of 2024, 2,204 (1.2%) asthma incidents were identified. By age group, 30 (1.4%) incidents occurred among patients younger than two years of age, 181 (8.2%) incidents occurred among patients 2 – 17 years of age, 1,992 (90.4%) incidents occurred among patients older than 18 years of age, and 1 (<0.1%) occurred among a patient of unknown age. A total of 1,004 (45.6%) incidents had no steroid, magnesium, or Albuterol/ipratropium administration documented, while 1,200 (54.4%) incidents reported administration of at least one of the three medications or had a pertinent negative documented.

Narrative Review

Of the 1,004 asthma incidents occurring among patients without steroid, magnesium, or Albuterol/ipratropium administration or a pertinent negative documented, 25 incidents were randomly selected for narrative review. Medication administration was documented in the narrative for 6 (24.0%) incidents. Of these six:

- In two instances, use of an inhaler or nebulizer prior to EMS arrival was noted in the narrative, with no detail provided on what medication was administered. For one of the two patients, a steroid was also administered prior to EMS arrival.
- In four instances, Albuterol was administered prior to arrival of EMS.

The remaining 19 (76.0%) 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, First 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	30	7	23.3	76.7
2 – 17 years	181	118	65.2	34.8
18 and older	1,992	1,053	52.9	47.1
Unknown	1	1	100.0	0.0
Total	**2,204**	**1,179**	**53.5**	**46.5**

*Includes documentation of medication administration or relevant pertinent negative.

Table 22. Emergency Responses Among Asthma Patients with Albuterol/Ipratropium Administration* by EMS Regional Council, First 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	57	32	56.1	43.9
Central Shenandoah	50	21	42.0	58.0
Lord Fairfax	21	14	66.7	33.3
Northern Virginia	145	94	64.8	35.2
Old Dominion	293	186	63.5	36.5
Peninsulas	209	129	61.7	38.3
Rappahannock	185	88	47.6	52.4
Southwest Virginia	274	110	40.1	59.9
Thomas Jefferson	69	49	71.0	29.0
Tidewater	592	320	54.1	45.9
Western Virginia	303	135	44.6	55.4
Out of State	6	1	16.7	83.3
Total	**2,204**	**1,179**	**53.5**	**46.5**

*Includes documentation of medication administration or relevant pertinent negative.

Table 23. Emergency Responses Among Asthma Patients with Steroid Administration* by Age Group, First Quarter 2024, Virginia

Age Group	Number Asthma Patients	Number Patients Receiving a Steroid	Percent With Steroid Administration Documented	Percent Without Steroid Administration Documented
< 2 years	30	0	0.0	100.0
2 – 17 years	181	29	16.0	84.0
18 and older	1,992	349	17.5	82.5
Unknown	1	1	100.0	0.0
Total	**2,204**	**379**	**17.2**	**82.8**

*Includes documentation of medication administration or relevant pertinent negative.

Table 24. Emergency Responses Among Asthma Patients with Steroid Administration* by EMS Regional Council, First Quarter 2024, Virginia

EMS Regional Council	Number Asthma Patients	Number Patients Receiving a Steroid	Percent With Steroid Administration Documented	Percent Without Steroid Administration Documented
Blue Ridge	57	20	35.1	64.9
Central Shenandoah	50	8	16.0	84.0
Lord Fairfax	21	6	28.6	71.4
Northern Virginia	145	31	21.4	78.6
Old Dominion	293	55	18.8	81.2
Peninsulas	209	63	30.1	69.9
Rappahannock	185	32	17.3	82.7
Southwest Virginia	274	50	18.2	81.8
Thomas Jefferson	69	11	15.9	84.1
Tidewater	592	53	9.0	91.0
Western Virginia	303	49	16.2	83.8
Out of State	6	1	16.7	83.3
Total	**2,204**	**379**	**17.2**	**82.8**

*Includes documentation of medication administration or relevant pertinent negative.

Table 25. Emergency Responses Among Asthma Patients with Magnesium Administration* by Age Group, First Quarter 2024, Virginia

Age Group	Number Asthma Patients	Number of Patients Receiving Magnesium	Percent With Magnesium Administration Documented	Percent Without Magnesium Administration Documented
< 2 years	30	0	0.0	100.0
2 – 17 years	181	4	2.2	97.8
18 and older	1,992	96	4.8	95.2
Unknown	1	1	100.0	0.0
Total	**2,204**	**101**	**4.6**	**95.4**

*Includes documentation of medication administration or relevant pertinent negative.

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

EMS Regional Council	Number Asthma Patients	Number of Patients Receiving Magnesium	Percent With Magnesium Administration Documented	Percent Without Magnesium Administration Documented
Blue Ridge	57	8	14.0	86.0
Central Shenandoah	50	1	2.0	98.0
Lord Fairfax	21	0	0.0	100.0
Northern Virginia	145	6	4.1	95.9
Old Dominion	293	12	4.1	95.9
Peninsulas	209	18	8.6	91.4
Rappahannock	185	4	2.2	97.8
Southwest Virginia	274	3	1.1	98.9
Thomas Jefferson	69	1	1.4	98.6
Tidewater	592	40	6.8	93.2
Western Virginia	303	8	2.6	97.4
Out of State	6	0	0.0	100.0
Total	**2,204**	**101**	**4.6**	**95.4**

*Includes documentation of medication administration or relevant pertinent negative.