
Virginia Department of Health

Office of Emergency Medical Services (OEMS)

Quarterly Report on EMS Incidents

Q2 2023

Office of Emergency Medical Services
1041 Technology Park Drive
Glen Allen, Virginia 23059
Phone: (804) 888-9100

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 2 2023 data for this report was collected from the ESO Pre-hospital Data System (NEMSIS version 3.4) on September 14, 2023. Importantly, many records submitted by Virginia EMS agencies for incidents occurring during the second quarter of 2023 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, Second Quarter, 2023, Virginia

Month	Total Failed Records
April	4,190
May	3,578
June	3,638

Virginia EMS Call Summary, Second Quarter, 2023

EMS agencies in Virginia responded to a total of 418,693 EMS calls during the second quarter of 2023 (see Tables 2—5 and Figure 1).

Table 2. Number of EMS Incidents by Type of Service Requested and Disposition, Second Quarter, 2023, 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)	28,941	33	48	93	156	1,442	53	30,766
Canceled (Prior to Arrival at Scene or On Scene)	51,836	16	1,411	761	173	324	139	54,660
Patient Dead at Scene (with and without resuscitation; with and without transport)	3,751	8	13	3	5	12	1	3,793
Patient Evaluated, No Treatment/Transport Required	3,681	1	33	19	1	60	23	3,818
Patient Refused Evaluation/Care (with or without transport)	24,543	35	30	58	17	80	24	24,787
Patient Treated, Released (AMA or per protocol)	17,094	26	8	25	16	142	146	17,457
Patient Treated, Transferred Care to Another EMS Unit	7,815	1	20	5	21	24	20	7,906
Patient Treated, Transported by Law Enforcement	405	0	1	0	0	2	2	410
Patient Treated, Transported by Private Vehicle	306	0	0	5	0	6	4	321
Patient Treated, Transported by this Unit	183,908	326	39,252	43,535	239	200	38	267,498
Standby (no services/support provided or public safety, fire, or EMS operational support provided)	5,737	4	9	95	39	144	1,044	7,072
Transport Non-Patient, Organs, etc.	1	1	11	127	2	57	1	200
Blank	1	0	0	4	0	0	0	5
Total	328,019	451	40,836	44,730	669	2,493	1,495	418,693

Table 3. Number of EMS Incidents by Type of Service Requested and Age Group, Second Quarter, 2023, 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)	4,638	4,464	5,484	14,924	109,732	107,827	80,950	328,019
Intercept/ Rendezvous	4	4	7	33	220	146	37	451
Interfacility Transport	723	738	940	1,095	13,452	22,889	999	40,836
Medical Transport	297	283	424	479	12,372	30,409	466	44,730
Mutual Aid	8	3	10	20	157	182	289	669
Public Assistance/ Other Not Listed	20	16	8	40	346	762	1,301	2,493
Standby	3	16	29	50	162	39	1,196	1,495
Total	5,693	5,524	6,902	16,641	136,441	162,254	85,238	418,693

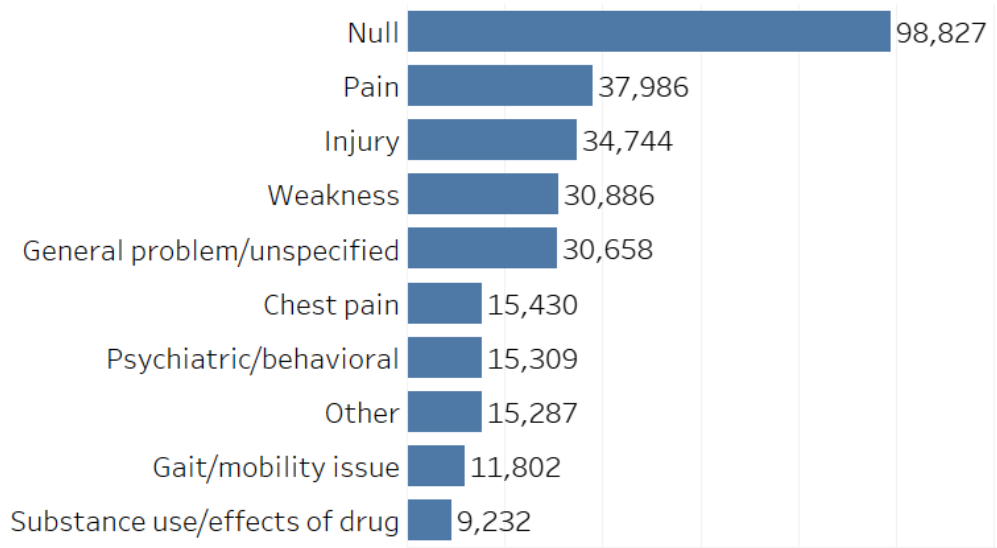
Table 4. Number of EMS Incidents by Patient Disposition and Age Group, Second Quarter, 2023, Virginia

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)	147	118	110	343	2,757	4,458	22,833	30,766
Canceled (Prior to Arrival at Scene or On Scene)	24	20	30	88	752	959	52,787	54,660
Patient Dead at Scene (with and without resuscitation; with and without transport)	25	4	14	102	1,605	1,968	75	3,793
Patient Evaluated, No Treatment/ Transport Required	200	157	167	366	1,541	1,385	2	3,818

Table 4 (continued). Number of EMS Incidents by Patient Disposition and Age Group, Second Quarter, 2023, 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)	771	684	808	2,052	10,676	7,440	2,356	24,787
Patient Treated, Released (AMA or per protocol)	554	662	701	1,652	8,430	5,449	9	17,457
Patient Treated, Transferred Care to Another EMS Unit	143	135	184	517	3,877	2,993	57	7,906
Patient Treated, Transported by Law Enforcement	2	2	30	63	284	26	3	410
Patient Treated, Transported by Private Vehicle	18	25	22	38	133	85	0	321
Patient Treated, Transported by this EMS Unit	3,785	3,701	4,829	11,392	106,237	137,367	187	267,498
Standby (no services/support provided or public safety, fire, or EMS operational support provided)	7	11	3	21	124	108	6,798	7,072
Transport Non-Patient, Organs, etc.	17	5	4	7	24	12	131	200
Blank	0	0	0	0	1	4	0	5
Total	5,693	5,524	6,902	16,641	136,441	162,254	85,238	418,693

Figure 1. All EMS Incidents by Top 10 Primary Impression Categories, Second Quarter, 2023, Virginia



Of the 418,693 total EMS calls that occurred during the second quarter of 2023, a total of 183,908 (43.9%) 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, Second Quarter, 2023, Virginia

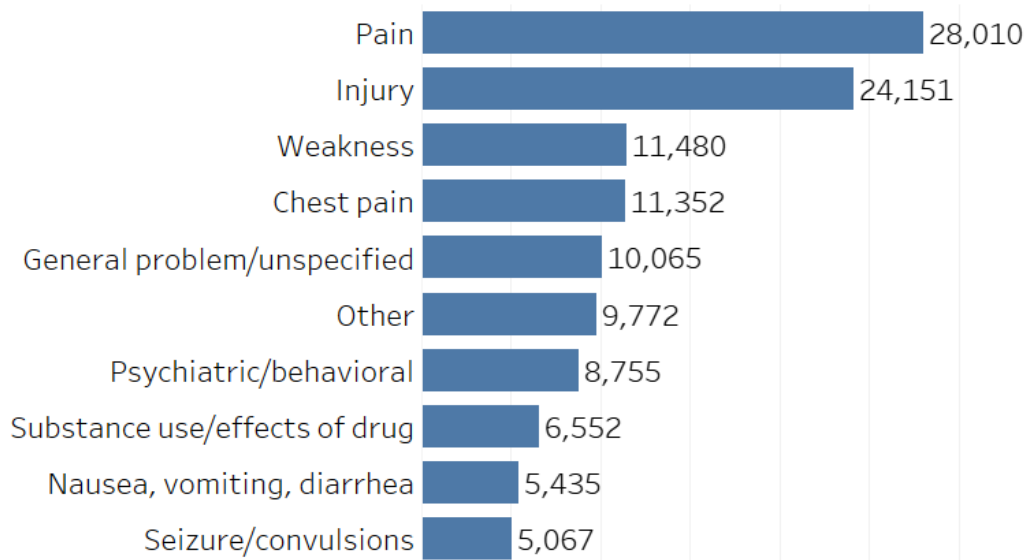


Table 5. Top 10 Primary Impressions for Emergency Responses by Patient Age Group, Second Quarter, 2023, Virginia

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	Obstetric condition
2	General problem/ unspecified	Pain	Psychiatric/ behavioral	Pain	Injury	Injury	Other
3	Injury	Seizure/ convulsions	Pain	Psychiatric/ behavioral	Chest pain	Weakness	Substance use/ effects of drug
4	Fever	General problem/ unspecified	Seizure/ convulsions	Substance use/ effects of drug	Psychiatric/ behavioral	Other	Injury
5	Fluid in/around the lungs	Allergic reaction	Substance use/ effects of drug	Seizure/ convulsions	Substance use/ effects of drug	General problem/ unspecified	Pain
6	Infection	Brain injury/ death	Syncope/near syncope	General problem/ unspecified	General problem/ unspecified	Chest pain	Seizures/ convulsions
7	Other	Psychiatric/ behavioral	General problem/ unspecified	Chest pain	Weakness	Infection	Cardiac arrest
8	Allergic reaction	Other	Other	Nausea, vomiting, diarrhea	Other	Fluid in/around the lungs	Fluid in/around the lungs
9	Pain	Fluid in/around the lungs	Allergic reaction	Syncope/near syncope	Seizures/ convulsions	Stroke/TIA	General problem/ unspecified
10	Nausea, vomiting, diarrhea	Nausea, vomiting, diarrhea	Brain injury/ death	Other	Nausea, vomiting, diarrhea	Nausea, vomiting, diarrhea	Infection

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” and that do not have a response of “yes” in the possible injury (einjury.02) field. 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 183,908 emergency response incidents reported by EMS during the second quarter of 2023, 5,391 (2.9%) non-traumatic chest pain incidents were identified in patients 35 years of age and older. Of these, a total of 4,519 (83.8%) patients had 12-lead acquisition and 2,237 (41.5%) 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, Second Quarter 2023, 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	402	366	91.0	9.0
Central Shenandoah	204	180	88.2	11.8
Lord Fairfax	91	76	83.5	16.5
Northern Virginia	532	259	48.7	51.3
Old Dominion	1,051	902	85.8	14.2
Peninsulas	440	387	88.0	12.0
Rappahannock	330	307	93.0	7.0
Southwest Virginia	497	400	80.5	19.5
Thomas Jefferson	117	97	82.9	17.1
Tidewater	1,048	964	92.0	8.0
Western Virginia	675	581	86.1	13.9
Out of State	4	0	0.0	100.0
Total	5,391	4,519	83.8	16.2

Table 7. Emergency Responses Among Non-Traumatic Chest Pain Patients ≥ 35 Years of Age with Aspirin Administration* by EMS Regional Council, Second Quarter 2023, Virginia

EMS Regional Council	Number Patients	Number of Patients with Aspirin Administration	Percent With Aspirin Administration Documented	Percent Without Aspirin Administration Documented
Blue Ridge	402	151	37.6	62.4
Central Shenandoah	204	106	52.0	48.0
Lord Fairfax	91	22	24.2	75.8
Northern Virginia	532	181	34.0	66.0
Old Dominion	1,051	530	50.4	49.6
Peninsulas	440	170	38.6	61.4
Rappahannock	330	155	47.0	53.0
Southwest Virginia	497	227	45.7	54.3
Thomas Jefferson	117	62	53.0	47.0
Tidewater	1,048	368	35.1	64.9
Western Virginia	675	265	39.3	60.7
Out of State	4	0	0.0	100.0
Total	5,391	2,237	41.5	58.5

*Includes documentation of medication administration or relevant pertinent negative.

Narrative Review

Of the 3,154 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 was documented in the narrative for 7 (28.0%) incidents. In four instances, aspirin was administered prior to arrival of EMS, while in two instances aspirin was administered by the responding EMS unit. In one incident, aspirin was administered both prior to EMS arrival and by the responding EMS unit. A pertinent negative was documented in the narrative for 5 (20.0%) incidents. The remaining 13 (52.0%) 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 183,908 emergency response incidents reported by EMS during the second quarter of 2023, 1,186 (0.6%) STEMI incidents were identified. Of these, 986 (83.1%) patients had 12-lead acquisition, with 955 (96.9%) records containing information on the time between arrival at patient and when an EKG was performed. It took a median of 7 minutes and 44 seconds and an average of 9 minutes and 50 seconds for the 955 STEMI patients to receive an EKG.

Stroke Emergency Responses

Stroke incidents are defined as those with a documented primary/secondary impression of stroke, a positive stroke scale score, a destination activation for stroke, or a stroke/TIA protocol used by an EMS clinician. Of the 183,908 emergency response incidents reported by EMS during the second quarter of 2023, 5,100 (2.8%) stroke incidents were identified. Of the 5,100 stroke incidents, 3,856 (75.6%) documented the performance of a stroke scale, 4,631 (90.8%) had a blood glucose or pertinent negative recorded, and 4,911 (96.3%) had the date/time the patient was last known well or the date/time of the patient’s symptom onset recorded. For 1,076 (21.1%) 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, Second Quarter 2023, Virginia

EMS Regional Council	Number Stroke Patients	Number of Patients Transported to Out of State Facilities	Number (Percent) of Patients Not Transported to a Certified Facility	Number (Percent) of Patients Transported to Acute Stroke Ready Facilities	Number (Percent) of Patients Transported to Primary Stroke Centers	Number (Percent) of Patients Transported to Thrombectomy Capable Hospitals	Number (Percent) of Patients Transported to Comprehensive Stroke Centers
Blue Ridge	221	0 (0.0)	19 (8.6)	0 (0.0)	0 (0.0)	202 (91.4)	0 (0.0)
Central Shenandoah	173	0 (0.0)	27 (15.6)	0 (0.0)	142 (82.1)	1 (0.6)	3 (1.7)
Lord Fairfax	107	0 (0.0)	22 (20.6)	0 (0.0)	84 (78.5)	0 (0.0)	1 (0.9)
Northern Virginia	928	3 (0.3)	31 (3.3)	25 (2.7)	340 (36.6)	200 (21.6)	329 (35.5)
Old Dominion	1,041	1 (0.1)	78 (7.5)	2 (0.2)	439 (42.2)	6 (0.6)	515 (49.5)
Peninsulas	368	0 (0.0)	15 (4.1)	0 (0.0)	141 (38.3)	0 (0.0)	212 (57.6)
Rappahannock	378	1 (0.3)	48 (12.7)	0 (0.0)	306 (81.0)	0 (0.0)	23 (6.1)
Southwest Virginia	292	73 (25.0)	177 (60.6)	0 (0.0)	40 (13.7)	2 (0.7)	0 (0.0)
Thomas Jefferson	196	0 (0.0)	4 (2.0)	0 (0.0)	7 (3.6)	2 (1.0)	183 (93.4)
Tidewater	799	5 (0.6)	25 (3.1)	27 (3.4)	501 (62.7)	5 (0.6)	236 (29.5)
Western Virginia	580	8 (1.4)	137 (23.6)	25 (4.3)	199 (34.3)	208 (35.9)	3 (0.5)
Out of State	17	13 (76.5)	3 (17.6)	0 (0.0)	1 (5.9)	0 (0.0)	0 (0.0)
Total	5,100	104 (2.0)	586 (11.5)	79 (1.5)	2,200 (43.1)	626 (12.3)	1,505 (29.5)

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, Second Quarter 2023, Virginia

EMS Regional Council	Number Stroke Patients	Number of Patients Transported to Out of State Facilities	Number (Percent) of Patients Not Transported to a Certified Facility	Number (Percent) of Patients Transported to Acute Stroke Ready Facilities	Number (Percent) of Patients Transported to Primary Stroke Centers	Number (Percent) of Patients Transported to Thrombectomy Capable Hospitals	Number (Percent) of Patients Transported to Comprehensive Stroke Centers
Blue Ridge	43	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	43 (100.0)	0 (0.0)
Central Shenandoah	43	0 (0.0)	11 (25.6)	0 (0.0)	32 (74.4)	0 (0.0)	0 (0.0)
Lord Fairfax	23	0 (0.0)	5 (21.7)	0 (0.0)	18 (78.3)	0 (0.0)	0 (0.0)
Northern Virginia	187	0 (0.0)	6 (3.2)	2 (1.1)	82 (43.9)	42 (22.5)	55 (29.4)
Old Dominion	214	0 (0.0)	15 (7.0)	0 (0.0)	86 (40.2)	1 (0.5)	112 (52.3)
Peninsulas	88	0 (0.0)	4 (4.5)	0 (0.0)	37 (42.0)	0 (0.0)	47 (53.4)
Rappahannock	83	0 (0.0)	8 (9.6)	0 (0.0)	73 (88.0)	0 (0.0)	2 (2.4)
Southwest Virginia	58	0 (0.0)	52 (89.7)	0 (0.0)	6 (10.3)	0 (0.0)	0 (0.0)
Thomas Jefferson	31	0 (0.0)	1 (3.2)	0 (0.0)	1 (3.2)	1 (3.2)	28 (90.3)
Tidewater	188	0 (0.0)	6 (3.2)	5 (2.7)	113 (60.1)	0 (0.0)	64 (34.0)
Western Virginia	115	0 (0.0)	28 (24.3)	0 (0.0)	33 (28.7)	54 (47.0)	0 (0.0)
Out of State	3	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	1,076	0 (0.0)	139 (12.9)	7 (0.7)	481 (44.7)	141 (13.1)	308 (28.6)

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 183,908 emergency response incidents reported by EMS during the second quarter of 2023, 25,872 (14.1%) trauma incidents were identified; 36 (0.1%) of the trauma patients were noted to be in cardiac arrest. Of the 25,836 patients not in cardiac arrest, a total of 1,932 (7.5%) Step 1 patients, 444 (1.7%) Step 2 patients, 566 (2.2%) Step 3 patients, and 22,894 (88.6%) 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 Step 1 Trauma Patients Not in Cardiac Arrest Transported to a Level 1/Pediatric or Level 2 Trauma Center by EMS Regional Council, Second Quarter 2023, Virginia

EMS Regional Council	Number Trauma Patients	Number (Percent) of Patients Transported to Level 1 Trauma Center	Number (Percent) of Patients Transported to Level 2 Trauma Center
Blue Ridge	52	7 (13.5)	42 (80.8)
Central Shenandoah	62	1 (1.6)	0 (0.0)
Lord Fairfax	44	0 (0.0)	30 (68.2)
Northern Virginia	466	179 (38.4)	98 (21.0)
Old Dominion	375	170 (45.3)	40 (10.7)
Peninsulas	132	0 (0.0)	83 (62.9)
Rappahannock	115	3 (2.6)	74 (64.3)
Southwest Virginia	113	13 (11.5)	0 (0.0)
Thomas Jefferson	67	52 (77.6)	3 (4.5)
Tidewater	310	122 (39.4)	3 (1.0)
Western Virginia	189	93 (49.2)	3 (1.6)
Out of State	7	6 (85.7)	0 (0.0)
Total	1,932	646 (33.4)	376 (19.5)

Table 11. Emergency Responses Among Step 2 Trauma Patients Not in Cardiac Arrest Transported to a Level 1/Pediatric or Level 2 Trauma Center by EMS Regional Council, Second Quarter 2023, Virginia

EMS Regional Council	Number Trauma Patients	Number (Percent) of Patients Transported to Level 1 Trauma Center	Number (Percent) of Patients Transported to Level 2 Trauma Center
Blue Ridge	2	1 (50.0)	1 (50.0)
Central Shenandoah	10	3 (30.0)	0 (0.0)
Lord Fairfax	5	1 (20.0)	3 (60.0)
Northern Virginia	76	46 (60.5)	18 (23.7)
Old Dominion	98	82 (83.7)	3 (3.1)
Peninsulas	36	1 (2.8)	34 (94.4)
Rappahannock	12	1 (8.3)	10 (83.3)
Southwest Virginia	22	2 (9.1)	0 (0.0)
Thomas Jefferson	14	11 (78.6)	1 (7.1)
Tidewater	122	98 (80.3)	0 (0.0)
Western Virginia	43	20 (46.5)	1 (2.3)
Out of State	4	4 (100.0)	0 (0.0)
Total	444	270 (60.8)	71 (16.0)

Table 12. Emergency Responses Among 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, Second Quarter 2023, Virginia

EMS Regional Council	Number Trauma Patients	Number (Percent) of Patients Transported to Level 1 Trauma Center	Number (Percent) of Patients Transported to Level 2 Trauma Center	Number (Percent) of Patients Transported to Level 3 Trauma Center
Blue Ridge	10	3 (30.0)	7 (70.0)	0 (0.0)
Central Shenandoah	11	1 (9.1)	0 (0.0)	0 (0.0)
Lord Fairfax	39	0 (0.0)	7 (17.9)	0 (0.0)
Northern Virginia	93	43 (46.2)	18 (19.4)	23 (24.7)
Old Dominion	88	55 (62.5)	6 (6.8)	13 (14.8)
Peninsulas	42	5 (11.9)	31 (73.8)	0 (0.0)
Rappahannock	34	3 (8.8)	26 (76.4)	0 (0.0)
Southwest Virginia	29	3 (10.3)	0 (0.0)	8 (27.6)
Thomas Jefferson	13	11 (84.6)	1 (7.7)	0 (0.0)
Tidewater	161	96 (59.6)	3 (1.9)	52 (32.3)
Western Virginia	46	20 (43.5)	1 (2.2)	8 (17.4)
Out of State	0	0 (0.0)	0 (0.0)	0 (0.0)
Total	566	240 (42.4)	100 (17.7)	104 (18.4)

Pain Emergency Responses

Pain incidents are defined as those with documented pain scale scores between 4 and 10.

Pain Scale Score 4—6

Of the 183,908 emergency response incidents reported by EMS during the second quarter of 2023, 24,215 (13.2%) incidents occurred among patients with a pain score of 4—6, with 1,384 (5.7%) patients receiving an analgesic (additional details provided in Tables 13—15). By age group, 115 (0.5%) incidents occurred among patients younger than 5 years of age, 387 (1.6%) incidents occurred among patients 5—12 years of age, 556 (2.3%) incidents occurred among patients 13—17 years of age, 1,656 (6.8%) incidents occurred among patients 18—24 years of age, 11,501 (47.5%) incidents occurred among patients 25—64 years of age, 9,997 (41.3%) 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 22,831 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. Analgesic administration was documented in the narrative for 2 (8.0%) incidents. The remaining 23 (92.0%) 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, Second Quarter 2023, 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	115	11	9.6	90.4
5-12 years	387	36	9.3	90.7
13-17 years	556	65	11.7	88.3
18-24 years	1,656	118	7.1	92.9
25-64 years	11,501	674	5.9	94.1
65 years and older	9,997	480	4.8	95.2
Unknown	3	0	0.0	100.0
Total	24,215	1,384	5.7	94.3

*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, Second Quarter 2023, 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	1,399	58	4.1	95.9
Central Shenandoah	906	64	7.1	92.9
Lord Fairfax	498	22	4.4	95.6
Northern Virginia	4,599	274	6.0	94.0
Old Dominion	4,454	171	3.8	96.2
Peninsulas	2,002	79	3.9	96.1
Rappahannock	1,666	188	11.3	88.7
Southwest Virginia	1,615	93	5.8	94.2
Thomas Jefferson	637	68	10.7	89.3
Tidewater	3,761	180	4.8	95.2
Western Virginia	2,654	174	6.6	93.4
Out of State	24	13	54.2	45.8
Total	24,215	1,384	5.7	94.3

*Includes documentation of medication administration or relevant pertinent negative.

Table 15. Analgesics Administered to Patients with Pain Score of 4—6, Second Quarter 2023, Virginia

Analgesic Administered	Number Analgesic Administrations†	Percent of Analgesics Administered
Acetaminophen	18	1.3
Dilaudid/Hydromorphone	7	0.5
Fentanyl	1,100	78.7
Ibuprofen/Motrin	3	0.2
Ketamine	48	3.4
Ketorolac/Toradol	108	7.7
Morphine	114	8.2
Tylenol	0	0.0
Total	1,398	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 second quarter of 2023, 33,332 incidents occurred among patients with a pain score between 7 and 10, with 3,109 (9.3%) patients receiving an analgesic (additional details provided in Tables 16–18). By age group, 70 (0.2%) incidents occurred among patients younger than 5 years of age, 378 (1.1%) incidents occurred among patients 5–12 years of age, 628 (1.9%) incidents occurred among patients 13–17 years of age, 2,123 (6.4%) incidents occurred among patients 18–24 years of age, 18,438 (55.3%) incidents occurred among patients 25–64 years of age, 11,690 (35.1%) incidents occurred among patients 65 years of age and older, and 5 (<0.1%) incidents occurred in patients whose age was not documented.

Narrative Review (Pain Scale Score 7–10)

Of the 30,223 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. A pertinent negative was documented in the narrative for 1 (4.0%) incident. The remaining 24 (96.0%) 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, Second Quarter 2023, 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	70	13	18.6	81.4
5–12 years	378	71	18.8	81.2
13–17 years	628	101	16.1	83.9
18–24 years	2,123	238	11.2	88.8
25–64 years	18,438	1,612	8.7	91.3
65 years and older	11,690	1,072	9.2	90.8
Unknown	5	2	40.0	60.0
Total	33,332	3,109	9.3	90.7

*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, Second Quarter 2023, 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	1,310	100	7.6	92.4
Central Shenandoah	1,283	141	11.0	89.0
Lord Fairfax	995	43	4.3	95.7
Northern Virginia	5,393	722	13.4	86.6
Old Dominion	7,460	395	5.3	94.7
Peninsulas	3,036	217	7.1	92.9
Rappahannock	1,892	371	19.6	80.4
Southwest Virginia	1,840	184	10.0	90.0
Thomas Jefferson	1,036	135	13.0	87.0
Tidewater	5,424	412	7.6	92.4
Western Virginia	3,631	373	10.3	89.7
Out of State	32	16	50.0	50.0
Total	33,332	3,109	9.3	90.7

*Includes documentation of medication administration or relevant pertinent negative.

Table 18. Analgesics Administered to Patients with Pain Score of 7–10, Second Quarter 2023, Virginia

Analgesic Administered	Number Analgesic Administrations [†]	Percent of Analgesics Administered
Acetaminophen	40	1.3
Dilaudid/Hydromorphone	5	0.2
Fentanyl	2,508	79.9
Ibuprofen/Motrin	10	0.3
Ketamine	118	3.8
Ketorolac/Toradol	248	7.9
Morphine	208	6.6
Tylenol	2	0.1
Total	3,139	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 second quarter of 2023, 1,202 incidents with a recorded pain score between 4 and 10 were identified among patients younger than 15 years of age, with 144 (12.0%) 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, Second Quarter 2023, 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	39	0	0.0	100.0
Central Shenandoah	43	5	11.6	88.4
Lord Fairfax	25	0	0.0	100.0
Northern Virginia	338	51	15.1	84.9
Old Dominion	221	14	6.3	93.7
Peninsulas	107	10	9.3	90.7
Rappahannock	101	13	12.9	87.1
Southwest Virginia	39	5	12.8	87.2
Thomas Jefferson	32	4	12.5	87.5
Tidewater	160	25	15.6	84.4
Western Virginia	97	17	17.5	82.5
Out of State	0	0	0.0	0.0
Total	1,202	144	12.0	88.0

*Includes documentation of medication administration or relevant pertinent negative.

Table 20. Analgesics Administered to Pediatric Patients with Pain Score of 4—10, Second Quarter 2023, Virginia

Analgesic Administered	Number Analgesic Administrations†	Percent of Analgesics Administered
Acetaminophen	6	4.1
Dilaudid/Hydromorphone	0	0.0
Fentanyl	124	85.5
Ibuprofen/Motrin	1	0.7
Ketamine	2	1.4
Ketorolac/Toradol	4	2.8
Morphine	8	5.5
Tylenol	0	0.0
Total	145	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 183,908 emergency response incidents reported by EMS during the second quarter of 2023, 2,422 (1.3%) asthma incidents were identified. By age group, 60 (2.5%) incidents occurred among patients younger than two years of age, 186 (7.7%) incidents occurred among patients 2 – 17 years of age, and 2,176 (89.8%) incidents occurred among patients older than 18 years of age. A total of 1,518 (62.7%) incidents had no steroid, magnesium, or Albuterol/ipratropium administration documented, while 904 (37.3%) incidents reported administration of at least one of the three medications.

Narrative Review

Of the 1,518 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 8 (32.0%) incidents. Of these eight:

- In three instances, Albuterol was administered prior to arrival of EMS.
- In one instance, Albuterol was administered by EMS.
- 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 incident, nebulizer use after EMS arrival was noted in the narrative, with no detail provided on what medication was administered.
- For one incident, Albuterol use was noted both before and after EMS arrival, with EMS administration of a steroid and magnesium also noted.

The remaining 17 (68.0%) 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, Second Quarter 2023, 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	60	16	26.7	73.3
2 – 17 years	186	77	41.4	58.6
18 and older	2,176	727	33.4	66.6
Unknown	0	0	0.0	0.0
Total	2,422	820	33.9	66.1

*Includes documentation of medication administration or relevant pertinent negative.

Table 22. Emergency Responses Among Asthma Patients with Albuterol/Ipratropium Administration* by EMS Regional Council, Second Quarter 2023, 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	64	15	23.4	76.6
Central Shenandoah	49	16	32.7	67.3
Lord Fairfax	28	11	39.3	60.7
Northern Virginia	188	98	52.1	47.9
Old Dominion	314	150	47.8	52.2
Peninsulas	203	76	37.4	62.6
Rappahannock	222	72	32.4	67.6
Southwest Virginia	270	68	25.2	74.8
Thomas Jefferson	70	32	45.7	54.3
Tidewater	605	179	29.6	70.4
Western Virginia	409	103	25.2	74.8
Out of State	0	0	0.0	0.0
Total	2,422	820	33.9	66.1

*Includes documentation of medication administration or relevant pertinent negative.

Table 23. Emergency Responses Among Asthma Patients with Steroid Administration* by Age Group, Second Quarter 2023, Virginia

Age Group	Number Asthma Patients	Number Patients Receiving a Steroid	Percent With Steroid Administration Documented	Percent Without Steroid Administration Documented
< 2 years	60	0	0.0	100.0
2 – 17 years	186	11	5.9	94.1
18 and older	2,176	123	5.7	94.3
Unknown	0	0	0.0	0.0
Total	2,422	134	5.5	94.5

*Includes documentation of medication administration or relevant pertinent negative.

Table 24. Emergency Responses Among Asthma Patients with Steroid Administration* by EMS Regional Council, Second Quarter 2023, Virginia

EMS Regional Council	Number Asthma Patients	Number Patients Receiving a Steroid	Percent With Steroid Administration Documented	Percent Without Steroid Administration Documented
Blue Ridge	64	5	7.8	92.2
Central Shenandoah	49	0	0.0	100.0
Lord Fairfax	28	2	7.1	92.9
Northern Virginia	188	16	8.5	91.5
Old Dominion	314	29	9.2	90.8
Peninsulas	203	18	8.9	91.1
Rappahannock	222	16	7.2	92.8
Southwest Virginia	270	6	2.2	97.8
Thomas Jefferson	70	2	2.9	97.1
Tidewater	605	21	3.5	96.5
Western Virginia	409	19	4.6	95.4
Out of State	0	0	0.0	0.0
Total	2,422	134	5.5	94.5

*Includes documentation of medication administration or relevant pertinent negative.

Table 25. Emergency Responses Among Asthma Patients with Magnesium Administration* by Age Group, Second Quarter 2023, Virginia

Age Group	Number Asthma Patients	Number of Patients Receiving Magnesium	Percent With Magnesium Administration Documented	Percent Without Magnesium Administration Documented
< 2 years	60	0	0.0	100.0
2 – 17 years	186	2	1.1	98.9
18 and older	2,176	18	0.8	99.2
Unknown	0	0	0.0	0.0
Total	2,422	20	0.8	99.2

*Includes documentation of medication administration or relevant pertinent negative.

Table 26. Emergency Responses Among Asthma Patients with Magnesium Administration* by EMS Regional Council, Second Quarter 2023, Virginia

EMS Regional Council	Number Asthma Patients	Number of Patients Receiving Magnesium	Percent With Magnesium Administration Documented	Percent Without Magnesium Administration Documented
Blue Ridge	64	0	0.0	100.0
Central Shenandoah	49	0	0.0	100.0
Lord Fairfax	28	0	0.0	100.0
Northern Virginia	188	0	0.0	100.0
Old Dominion	314	4	1.3	98.7
Peninsulas	203	2	1.0	99.0
Rappahannock	222	3	1.4	98.6
Southwest Virginia	270	1	0.4	99.6
Thomas Jefferson	70	1	1.4	98.6
Tidewater	605	6	1.0	99.0
Western Virginia	409	3	0.7	99.3
Out of State	0	0	0.0	0.0
Total	2,422	20	0.8	99.2

*Includes documentation of medication administration or relevant pertinent negative.