Virginia Department of Health

Office of Emergency Medical Services (OEMS)

Quarterly Report on Trauma Incidents

Q2 2024

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This report is based on the deliberations of the System Improvement Committee and analyses 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.

Introduction

Section B 3. of the Code of Virginia (§32.1-111.3) requires the monitoring of the quality of the Commonwealth's emergency medical services (EMS) and trauma services using data from the EMS patient care information system. The EMS Advisory Board reviews and analyzes such data quarterly and reports its findings to the Commissioner. The Advisory Board has delegated this function to the System Improvement Committee (formerly the Trauma Performance Improvement Committee).

This quarterly report focuses on four key areas:

1. Completeness of prehospital vital sign documentation (blood pressure, respiratory rate, and Glasgow Coma Score) as required in Step 1 of the Virginia Field Trauma Triage Decision Scheme.
2. The number of trauma patients treated and transported by EMS agencies.
3. The number of trauma patients who met Step 1 (vitals), Step 2 (anatomy of injury), and Step 3 (mechanism of injury/impact) Virginia Field Trauma Triage Criteria.
4. The number of patients meeting trauma triage criteria transported to hospitals not designated as trauma centers.

The results reported here represent a high-level summary of the findings. This report describes how each EMS Council Region is performing. The report will be provided to the appropriate Regional EMS Council Director for each region. The Directors will be given an opportunity to provide feedback, which may explain special circumstances for which an exception occurred. The findings of this report and any feedback from the Directors will be used to drive education and improve the Trauma Triage Plan.

EMS patient data is extracted from patient medical records submitted by EMS agencies to the Virginia Pre-Hospital Information Bridge (VPHIB) program (Elite v3) maintained within the Virginia Department of Health's (VDH) Office of Emergency Medical Services (OEMS). Data summarized in this report represent EMS responses that occurred during the second quarter of 2024 (January through March) and were entered into ESO as of 09/09/2024. VPHIB v3 data are based on the National EMS Information System (NEMSIS) standards.

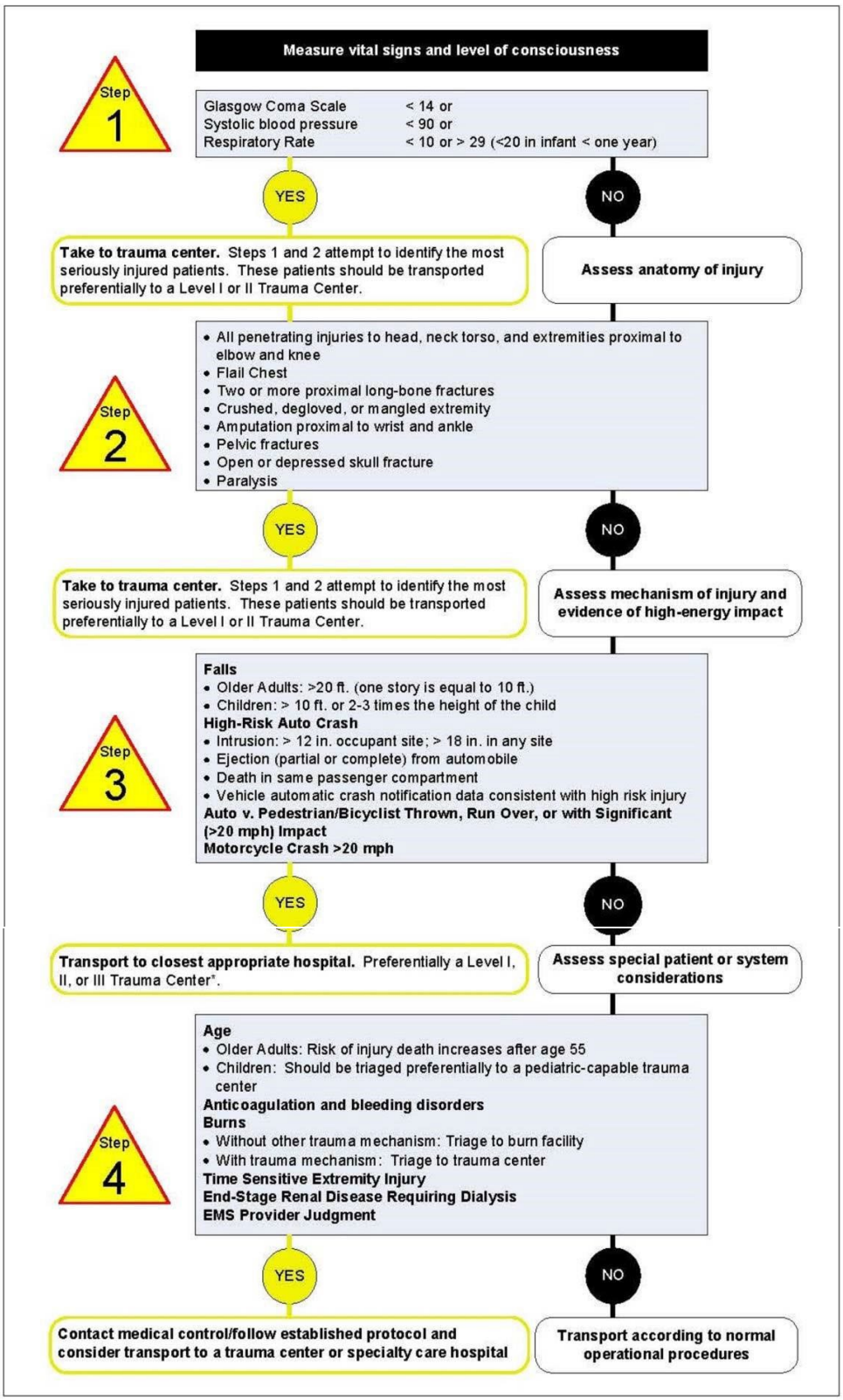
This report includes all EMS responses categorized as trauma incidents using the following guidelines (Table 1).

Table 1. Definition of Trauma Patients within VPHIB version 3

Type of Service Requested	
911 Response (Scene)	
Incident/Patient Disposition	
Patient Treated, Transported by this EMS unit	
Situation Provider Primary Impression (ICD-10-CM)	
• S00-S09* (Injuries to the head) • S10-S19* (Injuries to the neck) • S20-S29* (Injuries to the thorax) • S30-S39* (Injuries to the abdomen, lower back, lumbar spine, pelvis, and external genitals) • S40-S49* (Injuries to the shoulder and upper arm) • S50-S59* (Injuries to the elbow and forearm) • S60-S69* (Injuries to the wrist, hand, and fingers) • S70-S79* (Injuries to the hip and thigh) • S80-S89* (Injuries to the knee and lower leg) • S90-S99* (Injuries to the ankle and foot) • T07 (Injuries involving multiple body regions) • T14* (Injury of unspecified body region) • T20-T25* (Burns and corrosions of external body surfaces, specified by site) • T26-T28* (Burns and corrosions confined to eye and internal organs) • T30-T32* (Burns and corrosions of multiple and unspecified body regions) • T75.0 (Effects of lightning) • T75.4 (Electrocution) (With 7th digit character modifier of A, B, or C; D through S are excluded)	*Excluding:* • *S00* (Superficial injuries of the head)* • *S10* (Superficial injuries of the neck)* • *S20* (Superficial injuries of the thorax)* • *S30* (Superficial injuries of the abdomen, pelvis, lower back and external genitals)* • *S40* (Superficial injuries of shoulder and upper arm)* • *S50* (Superficial injuries of elbow and forearm)* • *S60* (Superficial injuries of wrist, hand, and fingers)* • *S70* (Superficial injuries of hip and thigh)* • *S80* (Superficial injuries of knee and lower leg)* • *S90* (Superficial injuries of ankle, foot, and toes)*

*All subsequent letters and digits included in definition

Figure 1. Virginia Field Trauma Triage Decision Scheme*



*The analyses in this report utilize the first gathered vital signs for Step 1.

Virginia Trauma Summary, Second Quarter, 2024

EMS agencies in Virginia responded to a total of 434,302 EMS calls; of that total, 280,341 (64.5%) patients had a disposition of treated and transported by the unit, 58,411 (13.4%) had a disposition of canceled, 24,866 (5.7%) patients had a disposition of EMS assist, 11,424 (2.6%) patients had a disposition of treated and transferred care to another unit, 2,163 (0.5%) patients were documented as dead at the scene, and 57,097 (13.1%) patients had some other incident disposition (e.g., patient treated and released AMA, patient treated and transported by private vehicle). Out of the total EMS calls, 26,509 (6.1%) incidents were classified as trauma incidents. There were 1,190 (0.3%) incidents that otherwise met all criteria of the Trauma Patient Definition (Table 1) but were not included in the total trauma count due to their disposition of treated and transferred care.

Of the 26,509 total trauma incidents, Northern Virginia EMS Council had the highest number of trauma calls (6,533; 24.6%), followed by the Old Dominion EMS Alliance (5,402; 20.4%). Trauma incident numbers for the quarter, broken down by month and Regional EMS Council, are shown in Figure 2. Tables 2-4 summarize the body regions most frequently affected by trauma, the top 10 hospitals receiving trauma transports, and vital signs data quality for trauma incidents.

Figure 2. Monthly Trauma Incidents by Regional EMS Council, Second Quarter, 2024, Virginia

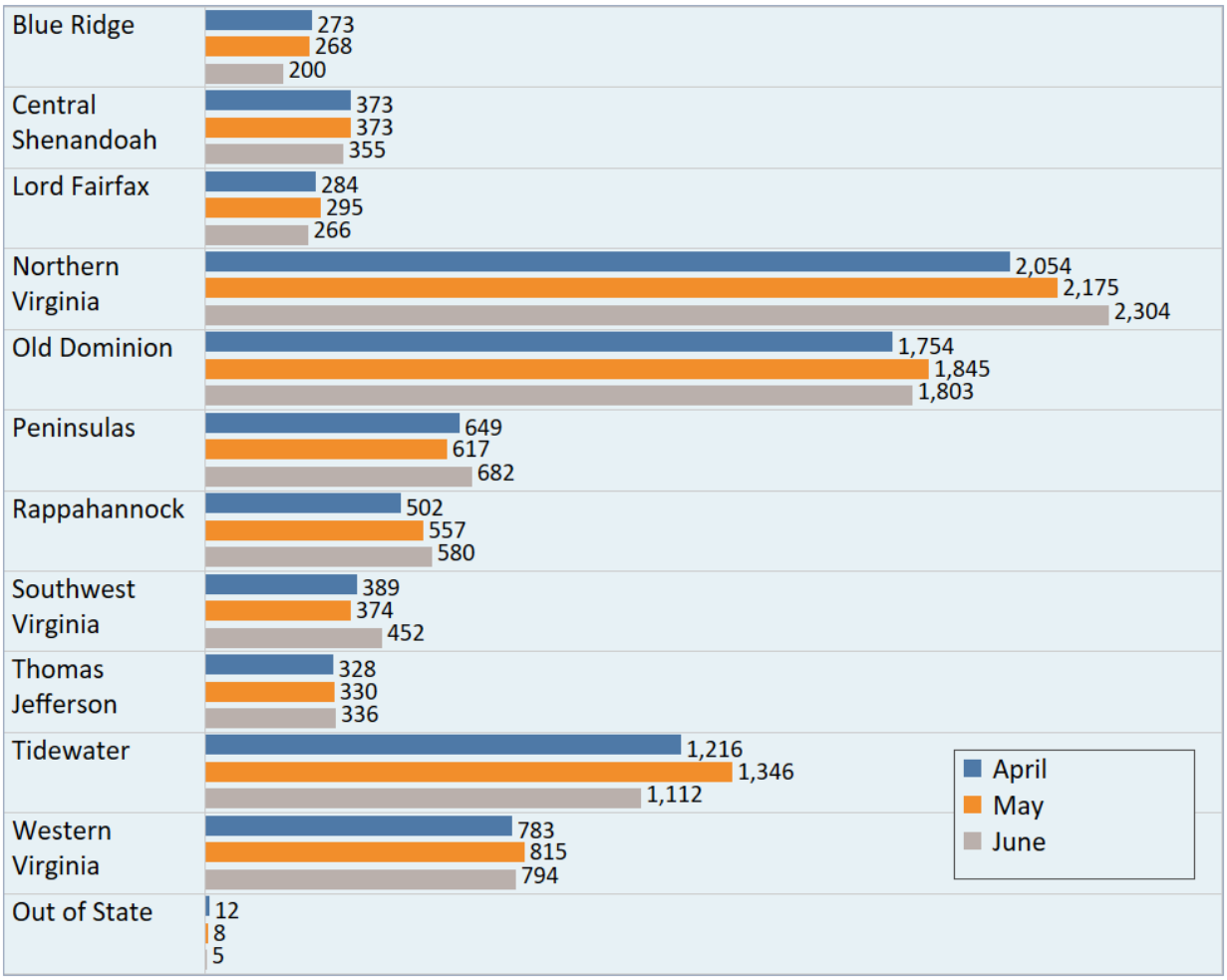


Table 2. Trauma Incidents by Abbreviated Injury Scale (AIS) Body Region, Second Quarter 2024, Virginia

Body Region of Injury	Counts of Incidents
Lower extremity	6,254 (23.6%)
Head	5,639 (21.3%)
Unspecified	5,222 (19.7%)
Upper extremity	3,863 (14.6%)
Face	1,967 (7.4%)
Spine	1,325 (5.0%)
Neck	1,034 (3.9%)
Thorax	492 (1.9%)
Abdomen	450 (1.7%)
Multiple	263 (1.0%)
Grand Total	**26,509 (100.0%)**

Table 3. Top Ten Hospital Destinations for Trauma Incidents, Second Quarter 2024, Virginia

Destination Hospital for Trauma Incidents	Counts of Incidents
Inova Fairfax Hospital	1,607 (6.1%)
Carilion Roanoke Memorial Hospital	941 (3.5%)
VCU Health Systems	921 (3.5%)
Riverside Regional Medical Center	918 (3.5%)
MWHC Mary Washington Hospital	896 (3.4%)
Sentara Norfolk General Hospital	840 (3.2%)
HCA Chippenham Hospital	828 (3.1%)
Inova Loudoun Hospital	798 (3.0%)
UVA Health System	773 (2.9%)
Sentara Virginia Beach General Hospital	700 (2.6%)

Table 4. Vital Signs Data Quality for Trauma Incidents, Second Quarter 2024, Virginia

Vital Signs Data Quality	Counts of Incidents
Total Number of Trauma Incidents	26,509
Patients with All 3 Vital Signs Reported	25,502 (96.2%)
Patients with Incomplete* Vital Signs	1,007 (3.8%)
Patients with Systolic Blood Pressure Reported	26,328 (99.3%)
Patients with Respiratory Rate Reported	25,846 (97.5%)
Patients with Glasgow Coma Score Reported	25,963 (97.9%)

*Incomplete vital signs are missing one or more of the vital signs required in Step 1 of the Trauma Triage algorithm (e.g., Systolic Blood Pressure, Respiratory Rate, or Glasgow Coma Score).

Trauma Incidents Meeting Virginia Trauma Triage Criteria

- Of the 26,509 trauma incidents reported by EMS during the second quarter of 2024, 1,931 (7.3%) met Trauma Triage Step 1 criteria, 382 (1.4%) met Step 2 criteria, and 587 (2.2%) met Step 3 criteria. Incidents can meet criteria for more than one step; those incidents were classified into the highest severity level met. For example, if an incident met both Step 1 and Step 2 criteria, it was counted as a Step 1 incident.
- Among the incidents meeting Step 1 criteria, 1,689 (87.5%) were classified as meeting Step 1 based on reported vital signs (see Appendix 1). The remaining 242 (12.5%) incidents were classified as meeting Step 1 based on the provider's impression, as reported in the "Trauma Center Criteria" field in the patient care report.
- Incidents meeting Step 2 and Step 3 were based solely on the "Trauma Center Criteria" and "Vehicular, Pedestrian, or Other Injury Risk Factor" fields.
- A total of 105 (0.4%) patients were involved in mass casualty incidents (MCI), which are not subject to the same trauma triage decision scheme guidelines. Therefore, these MCI incidents were excluded from any decision scheme analyses.

Pediatric Patients (Age < 15)

Trauma patients <15 years old are considered pediatric patients per trauma triage criteria. Of the 26,509 trauma incidents reported by EMS during the second quarter of 2024, 1,568 (5.9%) occurred among pediatric patients. Of the 1,931 Virginia trauma incidents meeting Step 1 trauma criteria, 199 (10.3%) occurred among pediatric patients. Four Step 1 pediatric patients were involved in mass casualty incidents and were excluded from trauma triage decision scheme analyses.

Table 5. Hospital Destination Type for Pediatric Patients Meeting Step 1 Criteria by Regional EMS Council, Second Quarter, 2024, Virginia

EMS Council Region	Grand Total	Trauma Hospital				
		Level I	Level II	Level III	Non-Trauma	Pediatric
Blue Ridge	10	0	9	0	0	1
Central Shenandoah	9	2	0	0	7	0
Lord Fairfax	4	1	1	0	2	0
Northern Virginia	56	30	3	10	11	2
Old Dominion	40	4	2	2	9	23
Peninsulas	8	0	3	0	5	0
Rappahannock	14	2	7	0	4	1
Southwest Virginia	9	0	0	1	8	0
Thomas Jefferson	9	6	0	0	3	0
Tidewater	23	0	0	0	5	18
Western Virginia	13	0	2	2	2	7
Grand Total	**195**	**45 (23.1%)**	**27 (13.8%)**	**15 (7.7%)**	**56 (28.7%)**	**52 (26.7%)**

- There were 71 non-MCI incidents involving pediatric patients that met Step 1 trauma criteria that were taken to a Level III trauma center or lower designation.
- Among the 382 incidents meeting Step 2 criteria during the second quarter of 2024, 19 (5.0%) occurred among pediatric patients. Zero Step 2 pediatric patients were involved in mass casualty incidents. Of the 19 non-MCI Step 2 pediatric patients, 3 (15.8%) were taken to a pediatric trauma center, 12 (63.2%) were taken to a Level I trauma center, and 4 (21.1%) were taken to a non-trauma designated location.
- Of the 587 incidents that met Step 3 criteria during the second quarter of 2024, 33 (5.6%) occurred among pediatric patients. Two Step 3 pediatric patients were involved in a mass casualty incident. Of the 31 non-MCI Step 3 pediatric patients, 12 (38.7%) were taken to a pediatric trauma center, 7 (22.6%) were taken to a Level I trauma center, 5 (16.1%) were taken to a Level II trauma center, 6 (19.4%) were taken to a Level III trauma center, and 1 (3.2%) was taken to a non-trauma designated location.

Geriatric Patients (Age ≥ 65)

There were 11,823 (44.6% of total trauma incidents) reports of trauma among geriatric patients during the second quarter of 2024. Of the 1,931 Virginia trauma incidents meeting Step 1 trauma criteria, 781 (40.4%) occurred among geriatric patients. One Step 1 geriatric patient was involved in a mass casualty incident and excluded from the trauma triage decision scheme analyses, leaving a remaining 780 non-MCI Step 1 geriatric patients (further details are shown below).

Table 6. Hospital Destination Type for Geriatric Patients Meeting Step 1 Criteria by Regional EMS Council, Second Quarter 2024, Virginia

EMS Council Region	Met Step 1	Trauma Hospital			
		Level I	Level II	Level III	Non-Trauma
Blue Ridge	24	0	24	0	0
Central Shenandoah	18	0	0	0	18
Lord Fairfax	29	0	10	0	19
Northern Virginia	184	70	38	34	42
Old Dominion	155	53	25	15	62
Peninsulas	45	0	26	0	19
Rappahannock	62	1	34	0	27
Southwest Virginia	36	2	0	8	26
Thomas Jefferson	29	20	1	0	8
Tidewater	107	18	6	40	43
Western Virginia	89	28	15	14	32
Out of State	2	1	0	0	1
Grand Total	**780**	**193 (24.7%)**	**179 (22.9%)**	**111 (14.2%)**	**297 (38.1%)**

- There were 408 non-MCI incidents involving geriatric patients who met Step 1 trauma criteria who were taken to a Level III trauma center or lower designation.
- Of the 297 non-MCI geriatric patients who met Step 1 criteria and were taken to non-trauma designated hospitals, 26 (8.8%) had an EMS provider primary impression of an isolated hip injury.
- Among the 382 incidents meeting Step 2 criteria during the second quarter of 2024, 92 (24.1%) occurred among geriatric patients. Zero Step 2 geriatric patients were involved in mass casualty incidents. Of the 92 non-MCI geriatric Step 2 patients, 38 (41.3%) patients were taken to a Level I trauma center, 18 (19.6%) were taken to a Level II trauma center, 15 (16.3%) were taken to a Level III trauma center, and 21 (22.8%) were taken to non-trauma designated hospitals.
- Of the 587 incidents that met Step 3 criteria during the second quarter of 2024, 61 (10.4%) occurred among geriatric patients. Zero Step 3 geriatric patients were involved in mass casualty incidents. Of the 61 non-MCI Step 3 geriatric patients, 20 (32.8%) patients were taken to a Level I trauma center, 10 (16.4%) was taken to a Level II trauma center, 8 (13.1%) were taken to a Level III trauma center, and 23 (37.7%) were taken to non-trauma designated hospitals.
- For 104 incidents, patient age was recorded to be greater than 100 years. Quality assurance of these incidents showed that 44.2% of the entered ages were incorrect.

Adult Patients (15 ≥ Age < 65)

Of the 26,509 trauma cases that occurred during the second quarter of 2024, 13,099 (49.4%) were among adult patients. Of the 1,931 Virginia trauma incidents meeting Step 1 trauma criteria, 947 (49.0%) occurred among adult patients. A total of nine Step 1 adult patients were involved in mass casualty incidents and were excluded from the trauma triage decision scheme analysis, leaving a remaining 938 non-MCI Step 1 adult patients (further details are shown below).

Table 7. Hospital Destination Type for Adult Patients Meeting Step 1 Criteria by Regional EMS Council, Second Quarter 2024, Virginia

		Trauma Hospital			
EMS Council Region	Met Step 1	Level I	Level II	Level III	Non-Trauma
Blue Ridge	16	3	13	0	0
Central Shenandoah	19	2	0	0	17
Lord Fairfax	30	2	17	0	11
Northern Virginia	208	95	49	28	36
Old Dominion	207	120	15	32	40
Peninsulas	56	2	37	0	17
Rappahannock	38	1	24	1	12
Southwest Virginia	50	11	0	6	33
Thomas Jefferson	39	33	1	0	5
Tidewater	171	80	21	53	17
Western Virginia	96	55	6	6	29
Out of State	8	3	0	0	5
Grand Total	**938**	**407 (43.4%)**	**183 (19.5%)**	**126 (13.4%)**	**222 (23.7%)**

- There were 348 non-MCI incidents involving adult patients who met Step 1 trauma criteria who were taken to a Level III trauma center or lower designation.
- Among the 382 incidents meeting Step 2 criteria during the second quarter of 2024, 269 (70.4%) occurred among adult patients. Zero Step 2 adult patients were involved in mass casualty incidents. Of the 269 non-MCI adult Step 2 patients, 172 (63.9%) patients were taken to a Level I trauma center, 40 (14.9%) patients were taken to a Level II trauma center, 25 (9.3%) were taken to a Level III trauma center, and 32 (11.9%) patients were taken to non-trauma designated hospitals.
- Among the 587 incidents meeting Step 3 criteria during the second quarter of 2024, 491 (83.6%) occurred among adult patients. A total of four Step 3 adult patients were involved in mass casualty incidents and were excluded from the trauma triage decision scheme analysis. Of the remaining 487 non-MCI Step 3 adult patients, 218 (44.8%) were taken to a Level I trauma center, 103 (21.1%) were taken to a Level II trauma center, 103 (21.1%) were taken to a Level III trauma center, and 63 (12.9%) were taken to non-trauma designated hospitals.

Air-Medical EMS Transport

There were 397 trauma patient transports by an air-medical ambulance during the second quarter of 2024. Of those:

- Twenty-seven (6.8%) were pediatric transports, of which:
    - Zero pediatric transports were involved in mass casualty incidents.
    - Of the 27 non-MCI pediatric air transports, 10 (37.0%) patients were taken to a Level I trauma center, 16 (59.3%) were taken to a pediatric trauma center, and 1 (3.7%) was taken to a non-trauma designated hospital.
- Ninety-six (24.2%) were geriatric transports, of which:
    - Zero geriatric transports were involved in mass casualty incidents.
    - Of the 96 non-MCI geriatric transports, 80 (83.3%) patients were taken to a Level I trauma center, 9 (9.4%) were taken to a Level II trauma center, 1 (1.0%) was taken to a Level III trauma center, and 6 (6.3%) were taken to a non-trauma designated hospital.
- Two hundred and seventy-four (69.0%) were adult transports, of which:
    - One adult transport was involved in a mass casualty incident.
    - Of the 273 non-MCI adult transports, 248 (90.8%) patients were taken to a Level I trauma center, 9 (3.3%) were taken to a Level II trauma center, 1 (0.4%) was taken to a Level III center, and 15 (5.5%) were taken to a non-trauma designated hospital.
- Zero trauma patients (0.0%) transported by air medical were of unknown age.

Causes of Injury

Trauma patient records were analyzed to identify the causes of injuries occurring in the Commonwealth of Virginia. Excluding unspecified and blank responses for causes of injury, fall injuries occurred most commonly, followed by motor vehicle collision injuries. Causes of injury for the second quarter of 2024 are shown in Table 8.

Table 8. Frequencies and Percentages of Causes of Injury, Second Quarter 2024, Virginia

Cause of Injury	Counts of Incidents
Falls, slips/trips	11,621 (43.8%)
MVC	5,411 (20.4%)
Blank	4,944 (18.7%)
Blunt force trauma	1,296 (4.9%)
Unspecified	1,059 (4.0%)
Penetrating trauma	742 (2.8%)
Non-motorized transport	328 (1.2%)
Machine-related	260 (1.0%)
Firearm	251 (0.9%)
Animal-related	201 (0.8%)
Burn, smoke inhalation, electrocution, explosion	153 (0.6%)
Self-harm	71 (0.3%)
Recreational	67 (0.3%)
Abuse	31 (0.1%)
Poisoning	17 (0.1%)
Asphyxiation	16 (0.1%)
Drowning	12 (<0.1%)
Human bite	11 (<0.1%)
Environment/weather-related	8 (<0.1%)
Aircraft	5 (<0.1%)
Overexertion/strain	5 (<0.1%)
Grand Total	**26,509 (100.0%)**

Under-Triage of Trauma Incidents

A Step 1 or Step 2 trauma incident is considered to be under-triaged if it was not a mass casualty incident and the patient was taken to either a Level III trauma center or a non-trauma designated hospital. A Step 3 trauma incident is considered to be under-triaged if it was not a mass casualty incident and the patient was taken to a non-trauma designated hospital. Injuries to the head, arms, or legs occurred most often among the under-triaged incidents (Table 9).

Table 9. Frequencies and Percentages of Under-Triaged Trauma Patients by AIS Body Region of Injury, Second Quarter 2024, Virginia

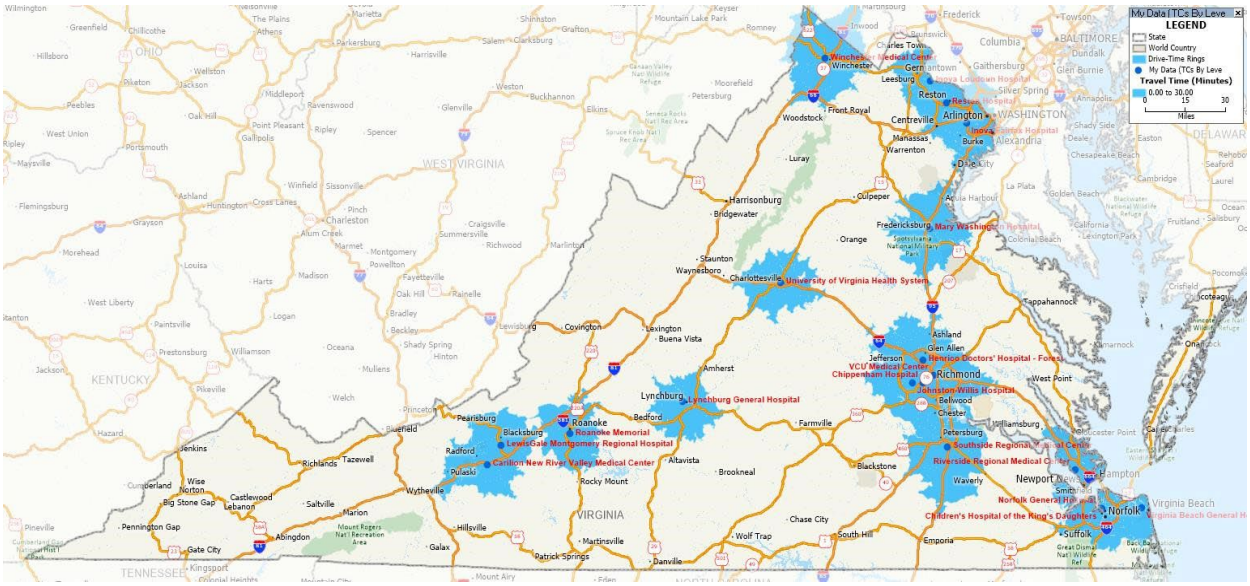
Body Region of Injury	Counts of Incidents
Unspecified	298 (29.5%)
Head	250 (24.7%)
Lower extremity	169 (16.7%)
Upper extremity	101 (10.0%)
Face	81 (8.0%)
Multiple	33 (3.3%)
Abdomen	22 (2.2%)
Spine	22 (2.2%)
Neck	21 (2.1%)
Thorax	14 (1.4%)
Grand Total	**1,011 (100.0%)**

Distribution of Trauma Facilities across Virginia

Trauma centers across Virginia are not uniformly distributed. The upper part of the Northern Virginia EMS Council and parts of Central Virginia (e.g., the greater Richmond area) have greater access to trauma centers, as multiple trauma centers are located within close proximity. Most parts of the Old Dominion EMS Alliance, Central Shenandoah EMS Council, and Western Virginia EMS Council have very limited access to trauma centers. The Central Shenandoah EMS Council and Southwest Virginia EMS Council have no trauma centers within their EMS regions, but are reasonably close to Level II trauma

centers in other EMS regions or states. The distribution of trauma centers across Virginia, surrounded by rings showing the geographical areas within a 30-minute drive of each trauma center, is shown below (Figure 4). This map displays which parts of Virginia have limited access to a trauma center.

Figure 3. Trauma Centers across Virginia, Surrounded by 30-Minute Drive Time Rings



Data Quality

Virginia EMS agencies have been working very hard to make sure they provide optimal care to their patients while also making efforts to improve data quality. Over the past years, there has been a significant improvement in trauma triage data quality. Continuation of this improvement is what the System Improvement Committee expects. The OEMS conducted quality assurance checks on trauma triage records from the second quarter of 2024, as described below.

- **Blank Vital Signs** (i.e., no numerical value and no pertinent negative reported): There were a total of 181 trauma incidents without systolic blood pressure documented, 663 trauma incidents without respiratory rate documented, and 546 trauma incidents without GCS documented. In some cases, vitals are unable to be obtained due to patient refusal or because the patient is a child. Such cases should be documented as Pertinent Negatives (e.g., “Refused” or “Unable to Complete”). Leaving the vital sign field blank and reporting such cases only in the patient care narrative will result in the vital sign being identified as missing.
- **Atypical Vital Signs:** Atypical vital signs are records reported with extreme vital sign values and no pertinent negative. The cutoff values for vitals to be considered atypical are chosen arbitrarily only for quality check and validation purposes. For this report, systolic blood pressures with values of less than 40 or greater than 250 and respiratory rates of less than 3 or greater than 100 were deemed extreme values. There were 19 instances of extreme systolic blood pressures and 30 instances of extreme respiratory rates.
- **Blank Trauma Triage Criteria:** There were 23,199 trauma incidents where the “Trauma Center Criteria” field and the “Vehicular, Pedestrian, or Other Injury Risk Factor” fields were both blank.

It is understandable that not all trauma incidents meet trauma triage criteria; however, some of these records are incorrectly classified or do not report important information.

- Of those incidents, 1,074 (4.6%) had recorded vitals meeting Step 1 trauma triage criteria.
- Step 2 and Step 3 trauma incidents may also be missing trauma triage criteria and therefore may also be incorrectly classified. However, Steps 2 and 3 trauma triage criteria are not based on vital signs, so the exact amount of misclassification cannot be identified.

- **Blank Age**
  - There were four trauma incident records where age or age units was left blank; quality assurance of the records showed that all four were of unknown age according to the patient narrative. An additional fifteen patients were identified to have an unknown age during quality assurance of patient records.
    - Of the 19 incidents where patient age was unknown:
      - Four met Step 1 trauma triage criteria. Two of these four Step 1 patients were taken to Level I trauma centers and two were taken to Level II trauma centers, indicating none were under-triaged.
      - Two met Step 2 trauma triage criteria and were taken to Level I trauma centers. Two met Step 3 trauma triage criteria and were taken to Level III trauma centers. The remaining eleven incidents did not meet step criteria; five were taken to a Level I trauma center, three were taken to a Level III trauma center, and three were taken to a non-trauma center.
        - Five incidents that were not classified as Step 1 had a reported respiratory rate between 10 and 20. Patients less than 1 year of age with a respiratory rate between 10 and 20 meet Step 1 criteria. Therefore, these patients are missing critical age information that may have classified them as Step 1, highlighting an important data quality concern.

Conclusions

Many factors influence the decision regarding where a patient is transported. As noted above, trauma centers are not equally distributed across Virginia. In some areas (Southwest Virginia and Northern Virginia), out of state trauma center resources are available. Despite having a total of 14 Level I and Level II trauma centers (combined) in Virginia, as well as access to several other similar facilities in surrounding states, large areas of Virginia remain underserved. The variability of resources across Virginia is often compounded by geographic and (especially in the case of Helicopter or Medevac EMS) weather factors. Although a solution to this problem is beyond the scope of this report, this variability needs to be considered when comparing the outcomes of pre-hospital trauma patients in Virginia.

Missing vital signs data in EMS records continues to be an area of focus for performance improvement efforts. Currently, about one out of every 26 patients (3.8%) have incomplete vital signs data. During the second quarter of 2024, 30.0% of patients not involved in a mass casualty incident who

met Step 1 trauma triage criteria and 14.9% of patients not involved in a mass casualty incident who met Step 2 criteria were taken to non-trauma centers. Acknowledging these data, there may be a need to re-examine how trauma triage criteria are being applied in the field, with an eye towards the existing barriers to trauma center access, including the absence of trauma centers in broad swaths of Virginia. Whether the addition of trauma resources center would allow for improved access and care requires further study.

OEMS staff performed quality assurance on trauma triage data from the second quarter of 2024. Specifically, the data values that were reviewed included the vital signs used in Step 1 trauma triage criteria designation, atypical vital sign values, and trauma triage criteria fields listed as not applicable, not recorded, or blank. OEMS will continue to perform these data quality checks and will summarize findings for inclusion in future trauma triage reports.

Appendix 1: Elite v3 Data Dictionary Elements for Trauma Triage Vital Signs and Trauma Triage Criteria

eVitals.06 - SBP (Systolic Blood Pressure)

Definition

The patient's systolic blood pressure.

National Element	Yes	Pertinent Negatives (PN)	Yes
State Element	Yes	NOT Values	Yes
Version 2 Element	E14_04	Is Nillable	Yes
Usage	Required	Recurrence	1 : 1

Associated Performance Measure Initiatives

Airway Cardiac Arrest Pediatric STEMI Stroke Trauma

Attributes

NOT Values (NV)
7701001 - Not Applicable 7701003 - Not Recorded

Pertinent Negatives (PN)
8801005 - Exam Finding Not Present 8801019 - Refused 8801023 - Unable to Complete

Constraints

Data Type	minInclusive	maxInclusive
integer	0	500

Data Element Comment

Required for ACS-Field Triage and other patient scoring systems.

eVitals.14 - Respiratory Rate

Definition

The patient's respiratory rate expressed as a number per minute.

National Element	Yes	Pertinent Negatives (PN)	Yes
State Element	Yes	NOT Values	Yes
Version 2 Element	E14_11	Is Nillable	Yes
Usage	Required	Recurrence	1 : 1

Associated Performance Measure Initiatives

Airway Cardiac Arrest Pediatric STEMI Stroke Trauma

Attributes

NOT Values (NV)
7701001 - Not Applicable 7701003 - Not Recorded

Pertinent Negatives (PN)
8801005 - Exam Finding Not Present 8801019 - Refused 8801023 - Unable to Complete

Constraints

Data Type	minInclusive	maxInclusive
integer	0	300

Data Element Comment

eVitals.23 - Total Glasgow Coma Score

Definition

The patient's total Glasgow Coma Score.

National Element	No	Pertinent Negatives (PN)	Yes
State Element	Yes	NOT Values	Yes
Version 2 Element	E14_19	Is Nillable	Yes
Usage	Required	Recurrence	1 : 1

Associated Performance Measure Initiatives

Airway Cardiac Arrest Pediatric STEMI Stroke Trauma

Attributes

NOT Values (NV)

7701001 - Not Applicable
7701003 - Not Recorded
7701005 - Not Reporting

Pertinent Negatives (PN)

8801019 - Refused
8801023 - Unable to Complete

Constraints

Data Type	minInclusive	maxInclusive
integer	3	15

Data Element Comment

Can be documented or calculated from EVitals.19 (GCS-Eye), EVitals.20 (GCS-Verbal), and EVitals.21 (GCS-Motor).

eInjury.03 - Trauma Center Criteria

Definition

Physiologic and Anatomic Field Trauma Triage Criteria (steps 1 and 2) as defined by the Centers for Disease Control.

National Element	Yes	Pertinent Negatives (PN)	No
State Element	Yes	NOT Values	Yes
Version 2 Element		Is Nillable	Yes
Usage	Required	Recurrence	1 : M

Associated Performance Measure Initiatives

Trauma

Attributes

NOT Values (NV)
7701001 - Not Applicable 7701003 - Not Recorded

CorrelationID
Data Type: string **minLength:** 0 **maxLength:** 255

Code List

Code	Description
2903001	Amputation proximal to wrist or ankle
2903003	Crushed, degloved, mangled, or pulseless extremity
2903005	Chest wall instability or deformity (e.g., flail chest)
2903007	Glasgow Coma Score <= 13
2903009	Open or depressed skull fracture
2903011	Paralysis
2903013	Pelvic fractures
2903015	All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
2903017	Respiratory Rate <10 or >29 breaths per minute (<20 in infants aged <1 year) or need for ventilatory support
2903019	Systolic Blood Pressure <90 mmHg
2903021	Two or more proximal long-bone fractures

Data Element Comment

2011 Guidelines for the Field Triage of Injured Patients - value choices for Steps 1 and 2. For falls, one story is equal to 10 feet.

Code 7701001 - Not Applicable should be used when none of the values listed in the code list for element eInjury.03 apply.

Version 3 Changes Implemented

Added to better evaluate the CDC-ACS 2011 Guidelines for the Field Triage of Injured Patients.
Website: http://www.cdc.gov/FieldTriage/