

Evaluating the Level of Care Provided to EMS Patients in Virginia when a Paramedic was On-Scene

AUTHORS

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INTRODUCTION

The National EMS Scope of Practice Model provides defined parameters of care that are recommended for licensed EMS providers with specific credentials.

Statewide evaluations of the relationship between the utilization of credentialed EMS clinicians and the level of care provided to EMS patients are limited

OBJECTIVE

The objective of this study was to evaluate the assessments and interventions provided for 9-1-1 patients who were treated and transported by Virginia EMS agencies when a paramedic was available on-scene.

METHODS

STUDY DESIGN

This was a retrospective observational study.

POPULATION & DATA SOURCE

All EMS events submitted between July 1 and December 31, 2021 to the Virginia EMS Data Repository, provided by ESO (Austin, TX). Inclusion criteria were:

- 1) A response type documented as a 9-1-1 response or intercept,
- 2) Documentation of a paramedic on-scene,
- 3) Successful passage of state data validation (in the NEMSIS 3.4 standard), and
- 4) A disposition consistent with patient treatment and transport.

MEASURES

Virginia Office of EMS (VAOEMS) staff reviewed all procedures and medications within the analytical dataset to determine the minimum provider certification level required in Virginia for the delivery of each intervention.

Based on the Virginia EMS Scope of Practice and Virginia EMS Formulary, each intervention was categorized as either:

- Basic Life Support (BLS),
- Advanced Life Support (ALS),
- or paramedic only.

ANALYSIS

The assessments and interventions for each EMS event were categorized and compared based upon minimum certification level required to complete the task.

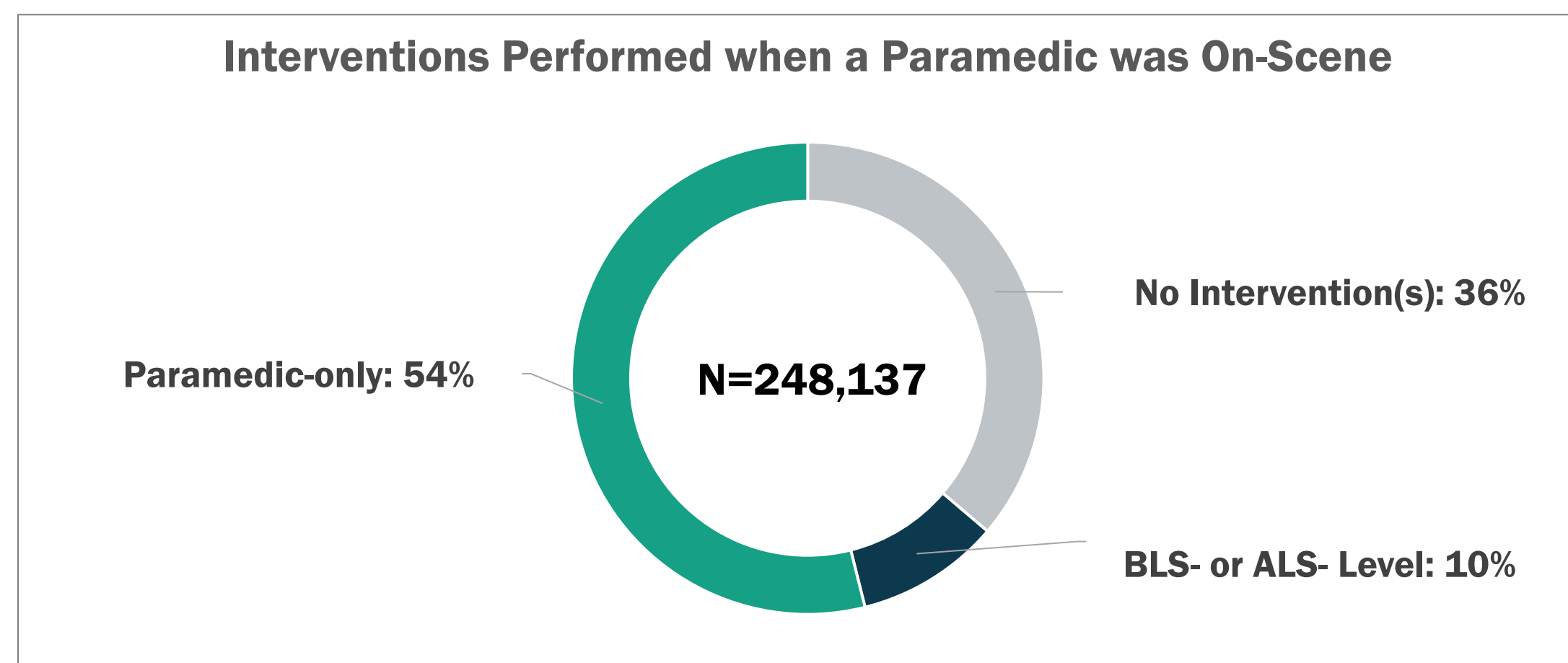
The top five most frequently documented EMS provider primary impressions were compared among events where a paramedic-only level intervention was performed and those where a paramedic-only level skill was not performed.

The top five most frequently documented procedures and medications were summarized by the level of care required for the intervention and the certification level of the provider delivering treatment..

Descriptive statistics were calculated.

RESULTS

During the study period, there were 889,605 EMS events submitted that passed state schematron validation. Of those, 76.2% (678,107) were documented as 9-1-1 response (n=677,711) or Intercept (n=396). There were 158,257 (64%) encounters were found to have a paramedic on-scene and an intervention documented in the prehospital care report and were included in the analysis.



Top five procedure performed by level

BLS level performed by EMTs (N=25,373)	ALS level performed by AEMTs (N=11,962)	Paramedic-only level performed by Paramedics (N=76,058)
12-lead ECG (n=6,824)	Insertion of an intravenous line (n=10,320)	ECG monitoring (n=31,433)
Continuous assessment of patient status (n=2,450)	Intraosseous cannulation (n=765)	3-lead ECG (n=26,584)
Assist ventilations via bag valve mask (n=1,465)	Venous blood draw (n=352)	ECG analysis (n=4,910)
Assessment of vital signs, not otherwise specified (n=1,437)	Intravenous cannulation (n=281)	manual defibrillation (n=3,846)
Blood glucose measurement (n=1,425)	Continuous positive airway pressure (n=131)	intubation, not otherwise specified (n=2,073)

Top five provider impressions recorded by level of intervention administered

No Intervention(s) (N=89,880)	BLS- or ALS-level (N=24,499)	Paramedic-only level (N=133,758)
Weakness (n=5,818)	Angina pectoris (n=1,599)	Weakness (n=6,796)
Acute pain (n=5,190)	Acute respiratory distress syndrome (n=1,576)	Disorders of the circulatory system (n=6,166)
Generalized abdominal pain (n=4,217)	Altered mental status (n=1,244)	Altered mental status (n=5,580)
Back pain (n=2,924)	Weakness (n=1,239)	Acute respiratory distress syndrome (n=3,970)
Injury (n=2,395)	Chest pain (n=777)	Injury (n=3,784)

Top five medications administered by level

BLS level performed by EMTs (N=6,886)	ALS level performed by AEMTs (N=2,654)	Paramedic-only Level performed by Paramedics (N=58,811)
oxygen (n=4,522)	normal saline (n=2,069)	Epinephrine 0.1 mg/ml (Epi 1:10,000) (n=15,816)
aspirin (n=753)	glucose 100 MG/ML injection (n=193)	fentanyl (n=10,717)
Albuterol (n=393)	Diphenhydramine (n=68)	Ondansetron (Zofran) (n=8,408)
naloxone (Narcan) (n=314)	Lactated Ringer's Solution (n=30)	Midazolam (n=3,016)
nitroglycerin sublingual tablet (n=290)	Dextrose 50% (D50) (n=27)	sodium bicarbonate (n=2,526)

CONCLUSION

More than 4 of every 10 EMS transport events where there was a paramedic on-scene either did not have any interventions performed or did not have a paramedic-level intervention performed. However, paramedic-level assessments and decision making could not be captured by the current study. There was little difference in providers' primary impressions among events where a paramedic-level intervention was performed and where a paramedic level skill was not performed. Further studies should continue to evaluate the alignment between the use of credentialed EMS clinicians and the levels of service required by EMS patients