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National Emergency Medical Services Advisory Council
FINAL
Advisory and Recommendations

Title: **Crash Scene Safety**

As prepared by the Subcommittee on **Professional Safety**

A. Executive Summary

Emergency Medical Services (EMS) responders are routinely dispatched to crash scenes involving different types of roadway incidents and unfortunately, fatalities and injuries from secondary crashes continue to occur. There is no such thing as "the scene is safe" when working a motor vehicle collision. It is one of the most dangerous scenes emergency responders are called to. The health and welfare of emergency responders and others on scene should be a top priority. Previous efforts, including the United States Department of Transportation (USDOT) National Roadway Safety Strategy (NRSS), have made a difference to improve crash scene safety but more needs to be done to protect those that unselfishly put their lives on the line to save and help others. Any fatality or injury from a secondary crash is unacceptable. It is devastating and it can have a profound effect on families, responding agencies and communities struggling to cope with the tragic loss or needless injury of those involved.

Secondary crashes are caused by a variety of reasons. Unfortunately, no single recommendation will eliminate fatalities and injuries from secondary crashes. However, the more steps taken to protect emergency responders and others on crash scenes, the higher the chance of attaining zero fatalities and injuries.

The intent of this advisory is to make recommendations for improving crash scene safety.

B. Recommendations

Federal Interagency Committee on EMS (FICEMS) through the National Highway Traffic Safety Administration (NHTSA) Office of EMS should:

Recommendation 1:

Ensure adequate NHTSA Office of EMS (OEMS) staff representation in all Federal Highway Administration (FHWA) initiatives related to post-crash care (to include Traffic Incident

Management (TIM) and Every Day Counts) for the purposes of promoting inclusion and involvement of state, local, tribal, and territorial (SLTT) governmental offices and other relevant stakeholders.

Recommendation 2:

Improve communications between relevant stakeholders through frequent and regular group updates (newsletter, website, social media, etc.) that, at a minimum, increase awareness of the interrelationship between EMS, trauma systems, and NHTSA/state highway safety priorities.

Recommendation 3:

Work with the FHWA to improve access and incentivize participation in Traffic Incident Management (TIM) training for all emergency responders and reinforce the importance of reducing scene times.

Recommendation 4:

Support the development of curriculum for Traffic Incident Management in the National EMS Education Standards.

Recommendation 5:

Work collaboratively with the FHWA to ensure that EMS is included as a stakeholder for any future updates to TIM.

Recommendation 6:

Utilize federal discretionary funding to encourage state highway safety offices to invest in efforts to address EMS workforce shortages that currently challenge underserved regions which results in lack of personnel to provide blocking or assist with traffic control.

Recommendation 7:

Continue to encourage universal implementation of “move over” laws at the state level by federally funding a higher profile, next generation of this endeavor intended to reach a broader audience.

Recommendation 8:

Further develop and fund enhanced crash notification systems to warn on-coming drivers of approaching roadway hazards including:

- Wireless Emergency Alerts (WEA) like AMBER Alerts that can be sent by authorized government alerting authorities through mobile carriers to those near a crash scene
- Notification to vehicles equipped with HAAS (Hardware-as-a-Service) Alert capabilities in the vicinity of a crash
- Emergency alert systems through GPS and navigation applications
- Improved technology and access to variable message signs
- Advanced roadside camera monitoring to improve situational awareness
- National adoption of Next Generation 911 (NG911) technology to 1) ensure 911 centers are universally able to receive and digest automatic collision notifications (ACN) and 2) ensure 911 centers are able to collect ACN data to make evidence-based contributions to the ACN capabilities.

Recommendation 9:

Support development of novel approaches to scene management training, such as virtual reality simulation and partnerships with existing training facilities, e.g., law enforcement training centers and safety centers or colleges that offer driver's training, to utilize their driving ranges.

Recommendation 10:

Develop and widely distribute guidelines for the appropriate use of Highway Emergency Response Units that specialize in blocking traffic (blocker vehicles) at crash scenes.

Recommendation 11:

Fund education and widespread distribution of existing standards pertaining to appropriate protective gear/attire that should be worn by emergency responders at roadway crashes. Emphasis should be placed on the use of this equipment by all emergency responders at all roadway incidents. Develop funding sources for acquisition of appropriate protective gear/attire for emergency responders. Work environments that demand simultaneous use of high-visibility attire and personal protective equipment should be factored into equipment acquisitions.

Recommendation 12:

Fund research into strategies and technologies to increase visibility of emergency vehicles and emergency responders at roadway crashes and support widespread implementation.

Recommendation 13:

Fund a new and separate public service announcement (PSA) campaign to specifically address the issue of emergency responder safety at crash scenes.

Recommendation 14:

Actively educate NHTSA Regional Operations, Governors Highway Safety Association (GHSA), and state offices of highway safety about the National EMS Information System (NEMSIS) and how state NEMSIS databases can be analyzed for state highway safety evaluation and improvement. Consider the NHTSA OEMS "Transportation by the Numbers" as an example.

Recommendation 15:

Encourage state, local, tribal, and territorial (SLTT) EMS offices to adopt the latest version of the NEMSIS standards and provide federal funding to support this important national data collection effort.

Recommendation 16:

Support linkage of EMS data (NEMSIS) with other related healthcare data sources to provide longitudinal de-identified databases to enhance crash injury epidemiology.

Recommendation 17

Support efforts to link EMS and trauma databases with other relevant registries such as crash, traffic safety, and law enforcement data; demographic data sets; CAD data sets; and fatality data to create longitudinal databases for epidemiological study. Severe, non-fatal injury data should also be included.

Recommendation 18:

Support the integration or linkage of EMS data (NEMSIS and other national first responder data sources) with automated collision notification systems from vehicles.

C. Scope and Definition

The focus of this advisory is to improve the safety of emergency responders and others on site at crash scenes. There are numerous hazards that can be encountered by emergency responders at crash scenes but since much of the research has centered around struck by vehicle fatalities resulting from secondary crashes, that is the focus of this advisory. Responder struck by incidents are defined as any instance that a responder is struck by a vehicle while working the scene of an incident (U. S. Department of Transportation (USDOT), FHWA, 2023). The Federal Highway Administration defines secondary crashes as the number of crashes beginning with the time of detection of the primary incident where the collision occurs either a) within the incident scene or b) within the queue, including the opposite direction, resulting from the original incident (USDOT, FHWA, 2020).

The causes of secondary crashes are numerous. Drivers may be distracted or following too closely. They may slow down to look at the accident and cause another one. There could be spilled cargo or debris in the roadway that they swerve to miss, or they hit it and crash into the exisiting scene. Other factors include a lack of scene visibility, the time of day or hazardous road conditions that affect driving conditions. Whatever the cause, the fact remains that one solution will not eliminate secondary crashes. However, every effort to improve safety crash scene safety will decrease the chance of fatalities or injuries sustained.

With an ambitious long-term goal of reaching zero roadway fatalities, the United States Department of Transportation (U.S. DOT) released the National Roadway Safety Strategy (NRSS) in 2022. It outlines their approach to reducing deaths and serious injuries occuring on the Nation's roadways. Part of this strategy is the Safe System Approach (SSA) with its five objectives: safer people, safer roads, safer vehicles, safer speeds, and post-crash care (USDOT, 2022).

One of those five objectives of the SSA is post-crash care which focuses in part on a safe working environment for emergency responders and preventing secondary crashes through robust traffic incident management practices. According to the NRSS, up to 20 percent of crashes are estimated to be secondary in nature, meaning that they occur as a result of an earlier incident. The U.S. DOT estimates that the likelihood of a secondary crash occurring increases by 2.8 percent for every minute the primary crash obstructs a travel lane or poses another type of hazard (USDOT, 2022). Therefore, reducing scene times is critical for the safety of everyone on any crash scene.

In 2022, the National Emergency Medical Services Advisory Council (NEMSAC) was requested by the National Highway Traffic Safety Administration (NHTSA) to respond to seven specific questions pertaining specifically to the "post-crash care" component of the NRSS. NEMSAC sent the response letter to NHTSA on November 3, 2022. This advisory fully supports the suggestions that were made in response to four of those questions that crosswalk with this advisory. They have been incorporated into this advisory as recommendations.

Because of the limited data regarding struck by fatalities and injuries, it is difficult to say with much certainty if there is a type of scene location (remote, rural, suburban, urban) that is more susceptible to have emergency responders or others struck by vehicles. The only information available at this time is a map that was created by Emergency Responder Safety Institute (ERSI) that shows the data they collected for struck-by line of duty deaths (LODDs.) (See Appendices)

D. Analysis

Defining a problem is necessary to identify solutions. Because there was little to no data being collected pertaining to secondary crashes, the Cumberland Valley Volunteer Firemen's Association/ERSI began doing research and collecting, analyzing, and sharing emergency responder struck-by data with other response organizations nationwide. Since 2019, they have tracked incidents involving emergency responders that were struck and killed by a vehicle while working at a roadway incident scene. The results are concerning and are in the chart below (Jack Sullivan, 2023).

YEAR	LEO	FIRE/EMS	TOW OPERATORS	ROAD SERVICE TECHNICIANS	DOT/SSP	TOTAL
2019	18	9	14	3	0	44
2020	17	4	21	1	3	46
2021	30	9	22	2	2	65
2022	*17*	*11*	*17*	*4*	*1*	*50*
TOTALS	**82**	**33**	**74**	**10**	**6**	**205**

(Jack Sullivan, 2023)

More specifically, according to the Emergency Responder Safety Institute (ERSI), since the beginning of 2019 through December 31, 2023, there have been 63 struck-by fatalities to emergency responders at crash scenes reported to ERSI (12 in 2019, 9 in 2020, 23 in 2021, 10 in 2022 and 9 in 2023). Of those 63 fatalities, 33 were Fire/EMS responders at crash scenes. During that same time-period, there were 251 reported emergency responders struck-by-vehicle fatalities that occurred at various roadway incidents (ERSI, 2023).

With the results from the struck-by fatalities noted above that are voluntarily reported, it is imperative that more data is collected, more research conducted, and new strategies implemented in addition to continuing or improving upon existing strategies. The following strategies have been identified as past or current efforts to increase the crash scene safety:

training and education such as the Traffic Incident Management (TIM) training and initiatives such as Every Day Counts; incident notification systems to warn on-coming drivers of roadway hazards; move-over laws; data collection to drive research and safety strategies; procedures and guidelines for crash scene safety and traffic control; requirement for wearing high-visibility safety apparel within the right-of-way of a Federal-aid highway; and research on the intensity, color, "moth to flame", and high visibility markings that can be used by emergency vehicle manufacturers and emergency responder agencies.

Finding other countries that have done research or collected data pertaining to secondary crashes was difficult. There was a study done in Australia by Monash University. The study was on safety outcomes for incident responders operating on high-speed roads and focused on the relationship with behavior, motivation, and role clarity. The results led them to the

next step in their program of research to develop, implement and evaluate a program to improve the safety of incident responders operating on high-speed roads. It did point out that findings from this study may have limited usefulness to other countries due to different constitutions or laws and road infrastructures (Chen, 2021).

Fortunately, in the United States, Traffic Incident Management (TIM) already exists. It consists of a planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM reduces the duration and impacts of traffic incidents; improves the safety of motorists, crash victims, and emergency responders; and reduces the frequency of secondary crashes. The goal of the FHWA TIM Program is to improve the safety of responders and road users, the reliability of travel, and the efficiency of incident and emergency response through institutionalization of TIM Programs. The FHWA TIM Program focuses on five tracks: National Leadership and TIM Organization; Data and Performance Management; Research and Development for Technology, Tools, and Practice Innovation; Training, Education, and Outreach; and Policies, Procedures, and Laws (USDOT, FHWA, 2023).

While there is no need to reinvent the wheel for strategies that are already working, improvements can be made to existing ones while more data can be collected, and research can help develop new solutions to reduce or eliminate secondary crashes.

E. Strategic Vision

Even though the data collection of crash scene struck-by fatalities or injuries is only reported voluntarily, it is indisputable that there is a need for better solutions, strategies, and tactics to protect emergency responders and others from secondary crashes while on scene. It is the hope that by using the recommendations of this advisory, lives can be saved.

F. Strategic Goals

Within five years, FICEMS through the NHTSA Office of EMS will have implemented the recommendations of this advisory. Due to the number of recommendations, NEMSAC requests an annual update on the progress on each of them.

G. Crosswalks

NEMSAC Post Crash Care Letter to NHTSA, 2022. This advisory links with recommendations made in response to four of the seven questions NEMSAC responded to (NEMSAC, 2022).

H. References

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I. Appendices

The map that was created by Emergency Responder Safety Institute (ERSI) that shows the data they collected for struck-by line of duty deaths (LODDs) can be found at: https://www.respondersafety.com/news/struck-by-incidents/map-of-u-s-struck-by-lodds/