

Willingness of Emergency Medical Services Professionals to Respond to an Active Shooter Incident

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ABSTRACT

Background: Historically, staging of civilian emergency medical services (EMS) during an active shooter incident was in the cold zone while these professionals awaited the scene to be completely secured by multiple waves of law enforcement. This delay in EMS response has led to the development of a more effective method: the Rescue Task Force (RTF). The RTF concept has the second wave of law enforcement escorting civilian EMS into the warm zone, thus decreasing EMS response time. To our knowledge, there are no data regarding the willingness of EMS professionals to enter a warm zone as part of an RTF. In this study, we assessed the willingness of EMS providers to respond to an active shooter incident as part of an RTF. **Methods:** A survey was distributed at an annual, educational EMS conference in North Carolina. The surveys were distributed on the first day of the conference at the beginning of a general session that focused on EMS stress and wellness. Total attendance was measured using identification badges and scanners on exiting the session. Data were assessed using χ^2 analysis, as were associations between demographics of interest and willingness to respond under certain conditions. A p value $< .01$ indicated statistical significance. **Results:** The overall response rate was 76% ($n = 391$ of 515 session attendees). Most surveys were completed by paramedics (74%; $n = 288$ of 391). Most EMS professionals (75%; $n = 293$ of 391) stated they would respond to the given active shooter scenario as part of an RTF (escorted by the second wave of law enforcement) if they were given only ballistic gear. However, most EMS professionals (61%; $n = 239$ of 391) stated they would not respond if they were provided no ballistic gear and no firearm. Those with tactical or military training were more willing to respond with no ballistic gear and no firearm (49.6%; $n = 68$ of 137) versus those without such training (31%; $n = 79$ of 250; odds ratio, 2.2; 95% confidence interval, 1.4–3.3; $p < .001$). **Conclusion:** EMS professionals are willing to put themselves in harm's way by entering a warm zone if they are simply provided the proper training and ballistic equipment.

KEYWORDS: emergency medical services; EMS; active shooter incident; Rescue Task Force

Introduction

The frequency of mass casualty incidents caused by an active shooter has increased throughout the United States and abroad. In the United States, from 2000 through the end of 2015, there have been 200 active shooter incidents. Excluding the shooters, these incidents have resulted in 696 wounded and 578 deaths.^{1,2} The vast majority of these incidents end quickly, typically within 15 minutes. The average EMS response time in the United States is less than 8 minutes; thus, it is a realistic possibility for EMS to arrive on scene before the shooting has ended.^{3,4} Historically, staging of civilian EMS providers during an active shooter incident was in the cold zone while awaiting the scene to be completely secured by multiple waves of law enforcement, since scene safety has, in the past, been given the highest priority. Thus, during an active shooter incident, EMS is typically staged in the cold zone, away from the warm or hot zones.

Because EMS usually waits for law enforcement to completely secure the scene, critical medical interventions are often not performed in a timely manner. This delayed EMS response during an active shooter incident could potentially result in an increase in the number of preventable deaths. One study of combat casualties noted that 24.3% of those killed possibly could have survived.^{5–7} Critical medical interventions must be performed in a prompt and timely manner if casualties are to survive potentially life-threatening injuries. Some believe that staging of civilian EMS in the cold zone while awaiting the scene to be completely secure has resulted in suboptimal victim outcomes.⁸ This has led to development of the RTF concept, which has recently gained favor as the more effective method. The RTF is a relatively new concept for civilian response. It was originally developed in the military as part of Tactical Combat Casualty Care.^{9–12} In 2011, the Committee on Tactical Emergency Casualty Care published the first guidelines for tactical medicine delivery by civilian EMS professionals.¹³ The concept has expanded to include whole community integration, with medical care provided at all levels, from the first care provider, nonmedical professional first responders, medical first responders, and physicians.¹⁴

The RTF concept has embedded EMS personnel arriving quickly at a patient's side to begin triage, perform critical interventions,

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and remove casualties from the warm zone for transport. The RTF concept uses a primary contact team of law enforcement officers to clear an area and downgrade that area from a hot zone to a warm zone. A secondary combined team comprising law enforcement and EMS (the RTF) then enters the warm zone. The law enforcement component of the team provides cover and protection for the EMS portion of the team to quickly assess, treat, and remove patients from the warm zone.

To clarify, the RTF does not use tactical paramedics embedded with the initial law enforcement or Special Operations and Tactical Team (SWAT) that enters a hot zone. The RTF consists of EMS personnel, not tactical paramedics, and thus does not regularly train together with law enforcement or SWAT. Instead, the RTF enters the warm zone only after the first wave of law enforcement has somewhat secured the scene. By deploying EMS early in an active shooter incident, critical medical interventions can be provided in a more timely manner and thus prevent unnecessary loss of life.

In 2013, an expert panel convened in Hartford, Connecticut, to help address the medical care provided during an active shooter incident, broaden the message, and engage the American College of Surgeons in public policy. They recommended that to improve survival during active shooter incidents, coordination between law enforcement and the medical and evacuation teams is required.¹⁵ In 2014, the Hartford consensus updated its recommendations stating that EMS/Fire/Rescue “response must be more fully integrated and traditional role limitations revised . . . It is no longer acceptable to stage and wait for casualties to be brought out to the perimeter.”¹⁶ Unfortunately, one recent study noted that even after training, 50% of EMS providers (without prior military or tactical experience) agreed they should never enter a building with an active shooter until the scene was declared safe.¹⁷

During the fourth update of the Hartford consensus, one of the three key themes that emerged was use of protective equipment (e.g., ballistic vests, helmets, and eyewear).¹⁸ Yet there are few published data regarding the use of ballistic equipment by EMS and Fire personnel. In addition, some EMS agencies acknowledge that the development and implementation of the RTF concept may benefit from the availability of ballistic equipment as one component of risk mitigation.¹⁹

Some may argue that use of ballistic equipment such as a ballistic vests, helmets, and eyewear for EMS professionals during an active shooter only makes common sense. Some believe that ballistic equipment is just another form of personal protective equipment, like gloves or an N95 mask. Yet, there is some controversy about whether ballistic protective equipment (i.e., body armor) should be required for medical personnel who may be called to respond to active shooter incidents.¹⁹ Some believe ballistic equipment is too costly and potentially increases the liability of the EMS agency. Others believe that ballistic equipment will only make EMS appear to be law enforcement and thus be more of a target. Because of increased violence against EMS personnel, a small minority suggests EMS professionals should also be armed.²⁰

To our knowledge, there are no data regarding the willingness of EMS professionals to enter a warm zone as part of an RTF. The goal of this study was to assess the willingness of EMS providers to respond in an active shooter incident.

Methods

After review and approval by the institutional review board at East Carolina University Brody School of Medicine, an anonymous voluntary survey was distributed to participants at EM Today, a statewide, educational EMS conference held annually in North Carolina. To attract EMS professionals from the entire state, the conference is located in Greensboro, North Carolina, which is centrally located. Attendees are primarily EMS field providers at all levels, but training officers and administrators are not excluded.

After a review of the literature, the survey tool was developed by the authors of the current study, who are experts in the field of emergency medicine and EMS, and have a combined experience of over 70 years. The closed-ended paper survey consisted of an introductory active shooter scenario, six simple closed-ended (i.e., yes or no) questions regarding their willingness to respond, and a short demographics section (Table 1). We purposefully decided not to specify the type or level of ballistic gear in the survey, because of the many different types and levels of ballistic gear available.

TABLE 1 Survey Scenario, Questions, and Responses

Scenario: You are the first EMS unit to arrive at an unsecure scene of an active shooter in a high school. The first group of police officers has entered the school. The second wave of police officers asks you to join them as they enter the school to provide care to any victims. The first wave of law enforcement has not neutralized the threat.

Yes (No.)	No (No.)	Unanswered (No.)	Question
138	249	2	Q1. Do you have any tactical/military medical training?
221	168	2	Q2. Do you have any tactical EMS training available to you?
37	354	0	Q3. Are you currently a member of tactical medical response unit?
360	31	0	Q4. In the event of an active shooter situation such as described above, would you be willing to enter the hostile environment with law enforcement to provide care to the injured if you had ballistic gear and a firearm?
293	94	1	Q5. Same scenario: Would you enter with ballistic gear but no firearm?
148	239	4	Q6. Same scenario: Would you enter without ballistic gear and without a firearm?
73	284	34	Q7. Current or former military member?

The surveys were distributed at the beginning of a general session on the first day of the conference. The session was entitled “If Life Is Worth Saving, It Must Be Worth Living” and focused on stress and provider wellness. Surveys were distributed by two of the authors by placing them on every seat in the session before its start. The surveys were then collected by the same two authors as attendees left the session; surveys left on seats in the room after completion of the session also were collected. Total attendance was measured using identification badges and scanners as attendees exited the session.

The survey data were entered in an Excel spreadsheet (Microsoft, www.microsoft.com). Statistical analyses were completed

JMP Pro, version 9.3 (SAS Institute, www.sas.com), using a χ^2 test with measures of association for a 2×2 table. Associations between demographics of interest and willingness to respond under certain conditions were determined using the Fisher exact test (JMP Pro), with $p < .01$ indicating significance.

Results

The overall response rate was 76% ($n = 391$ of 515 attendees) for those who attended the session, with the majority of surveys being completed by paramedics (74%; $n = 288$ of 391; Table 2). Most of the participants were male (64%; $n = 221$ of 344); 47 participants did not specify their sex.

TABLE 2 Participant Demographics by Level of Provider

Classification/Credential	No.	%
Paramedic	288	73.7
CCEMTP or FP	18	4.6
EMT – Intermediate	15	3.8
EMT – Basic	25	6.4
MD	5	1.3
RN	5	1.3
Others ^a	35	9.0
Total	391	100

CCEMTP, critical care paramedic; FP, flight paramedic; MD, medical doctor; RN, registered nurse.

^aIncludes (in descending order): Navy Corpsman, law enforcement, training officer, physician assistant, public safety, medical responder.

One-third of respondents had more than 20 years EMS experience, and 20% had 5 years of experience or less (Table 3). In addition, 20% reported having previous military or law enforcement experience. The vast majority (91%) of the respondents were not a part of a tactical medical response unit, and only 35% reported yes to having tactical medical training.

TABLE 3 Years of Experience in Emergency Medical Services

Years of Experience	No.	%
0–5	80	20.4
6–10	55	14.1
11–15	70	17.9
16–20	50	12.7
>20	130	33.3
Unanswered	6	1.5
Total	391	100

Most of the EMS professionals (75%; $n = 293$ of 391) stated they would respond as part of an RTF to the given active shooter scenario if given only ballistic gear (Table 1). The majority (61%), however, stated that as a member of an RTF, they would not respond if they were provided no ballistic gear and no firearm.

Willingness to respond with no ballistic gear and no firearm was associated with having tactical or military training, with 49.6% ($n = 68$ of 137) of those with training indicating they would respond, compared with 31% ($n = 79$ of 250) of those without training (odds ratio [OR], 2.2; 95% confidence interval [CI], 1.4–3.3; $p < .001$). Willingness to respond under these conditions was also associated with the respondent being a former or active military member. Of 74 military members, 64 (87.7%) reported they would respond with no ballistic gear and no firearm, compared with 72.8% ($n = 222$ of 251) of

those who had no military service (OR, 2.7; 95% CI, 1.6–4.6; $p < .001$).

Willingness to respond using ballistic gear and no firearm was also associated with having tactical or military training, with 98.6% ($n = 136$ of 138) of those with training indicating they would respond, compared with 88.4% ($n = 222$ of 251) of those without training (OR, 8.9; 95% CI, 2.1–37.8; $p < .001$).

We did not analyze the willingness to respond based on provider level, because most survey responders were paramedics. We also did not examine response by sex, because of the large percentage of survey responders who did not indicate their sex.

Discussion

Mass casualty incidents involving active shooters are becoming more common. Although there are combat data from the military proving the benefit of early medical interventions, there are no published research data, to our knowledge, proving that earlier EMS arrival definitively decreases the number of deaths in a civilian active shooter event. Furthermore, research has shown that the injuries in a combat environment are different from civilian casualties. Yet these same studies found there are some preventable deaths in civilian active shooter events and suggest that earlier EMS response potentially could result in a decreased mortality rate.^{19,20}

This potential to reduce the number of deaths resulting from an active shooter incident has resulted in a national focus to promote the RTF concept.^{8,11} The EMS community must be able to provide medical interventions with minimal delays while also trying to mitigate their own risk. EMS professionals need strategies and the ability to act quickly to attempt to save lives. The results of our study suggest that one barrier to implementing an RTF may be the reluctance of EMS professionals to go into a warm zone if not given ballistic gear.

Even with training, more than half of EMS professionals are reluctant to enter a warm zone, according to previous studies.¹² Our current study supports the concept that a minority of EMS professionals are willing to respond to these type of emergencies if not given the training or protective equipment. Our study shows, however, that with ballistic gear, most survey participants would be willing to respond. Our findings also suggest that even more EMS professionals would be willing to respond if provided both tactical training and ballistic protection.

Again, some may argue over whether ballistic protective equipment is required for medical responders.²¹ One psychologist believes that perception does not always equal reality.²³ Yet others may argue that perception is reality and that public perceptions drive policy decisions.²⁴ If this is true, then policies are needed that mandate appropriate protective equipment such as ballistic vest and helmets for EMS professionals. The position paper by the Urban Fire Forum states, “Firefighter EMTs and paramedics should be provided ballistic vests and helmets if they are to participate in a rescue task force (RTF).”¹¹

Some larger cities and those areas with high crime rates have already adopted these national standards. Local policies addressing appropriate mitigation of threat or risk to EMS providers in an active shooter incident should mirror those of

current national position papers and best practice guidelines.²⁵ These guidelines have now become a national standard as part of the National Fire Protection Association (NFPA) 3000 Standard for Active Shooter/Hostile Event Response (ASHER) Program.²⁶ If these Urban Fire Forum and NFPA recommendations are not adopted locally by an individual agency, then EMS and firefighters may never be willing to fully embrace the RTF concept at the local level. This is especially important because many active shooter incidents are not limited to large cities; they also occur in smaller towns and cities.

After policy and, in some states, regulatory changes, the cost associated with education and purchase of ballistic vests will be another barrier for EMS. However, if these barriers could be overcome, we could save lives in an active shooter incident that would otherwise be lost. Some may argue that the cost of ballistic equipment for EMS is prohibitive, yet some researchers have shown that “retired” ballistic vests, ranging in age from 6 to 27 years, maintained their ballistic protection against 9mm, .40 caliber, .45 caliber, and 12-gauge shotgun rounds.²¹ Those authors suggested that, in theory, retired ballistic vests from law enforcement could be given to EMS as a first step in this otherwise costly process. Many will disagree with these authors about having EMS and firefighters supplied with used ballistic vests. Nevertheless, the study does show that the typical ballistic vest has a much longer lifespan than the 5 years suggested by the manufacturer; thus, over time, the costs would be much less than expected.

The authors do support that EMS professionals be provided with ballistic gear but do not support EMS having a firearm. We also support permitting only EMS professionals who are sworn law enforcement officers or who are an active component of the responding SWAT team to carry a firearm, and then only if approved by the local law enforcement agency and according to state EMS rules. Owing to increased violence against EMS professionals, some states have added or are considering legislation allowing EMS professionals to carry firearms while on duty.²² Interestingly, 92% of survey participants were willing to respond if they had both ballistic gear and a firearm. Furthermore, our results suggest that tactical- or military-trained participants were 8.9 times more likely to respond if provided ballistic gear and a firearm, compared with those without tactical or military training (95% CI, 2.1–37.8; $p < .001$). This study was conducted in North Carolina where the Rules by the State Office of EMS do not allow an EMS professional to carry a firearm while on duty, which is in direct contradiction to the state concealed carry permit legislation that allows permit holders who are firefighters and EMS providers to enter a school with a concealed weapon when acting in discharge of their official duties.²⁷

This study has several limitations. The survey was limited to only one state, and most participants were paramedics. Although the survey was performed at a statewide EMS meeting with participants from across the entire state, a substantial percentage (33%) of respondents had 20 years or more EMS experience, and 20% reported previous military or law enforcement experience. As such, the willingness of EMS professionals to respond to an active shooter incident may vary in other states, with different levels of providers and of experience.

Some may argue that our response rate for our survey was only 76%, and that missing 24% of the participants could

have skewed the results. Others might argue that, statistically, 76% would be considered a very high response rate for a single attempt at a paper survey for the sample size of our study.²⁸ From a statistical standpoint, using a 99% confidence level with a sample size of 515 and a response rate of 76% ($n = 391$ responders), the margin of error is $\pm 2.7\%$. Future studies should examine whether these results are reproducible in other parts of the country or if regions with lower or higher rates of crime may influence the results.

A potential bias would have been for one individual to have filled out more than one survey form; this is unlikely because there were monitors throughout the room, but it is not impossible. Another limitation with potential bias is participants anticipating this survey may be used to change public policy and thus may influence funding of ballistic equipment. If that were the case, these individuals still feel the need to have the ballistic equipment. Some readers may contend that the willingness of EMS professionals to respond is irrelevant because the policy of an EMS agency should exceed an individual's willingness to respond, while others would support that if the majority of EMS professionals are unwilling to respond, then the EMS agency would have difficulty implementing the policy or, worse, have a decreased retention of EMS personnel.

Although the survey did not specify the exact type of ballistic gear, and that may have affected the results, we would expect the EMS agencies to implement a best practices model and provide wearable protection. We purposefully decided not to specify the type or level of ballistic gear in the survey, because of the many different types and levels of ballistic gear available, each with its own advantages and disadvantages. It is possible that the willingness of EMS professionals to respond may have varied if we had specified the type of equipment (e.g., vest, helmet, eye protection) and level of protection (i.e., level IIA versus IIIA versus IV).

Future studies should also compare the willingness of EMS providers to respond in an active shooter event if given only a ballistic vest versus a vest, helmet, and eye protection. Studies also could be performed to determine the specific resources needed by EMS providers to maximize survival of victims after an active shooter event. Research on the ideal number of personnel in an RTF to maximize survival has not been documented, to our knowledge.

Conclusion

The first priority in any active shooter situation is to stop the shooting, but a close second is to rapidly treat those casualties with life-threatening injuries to decrease the overall mortality rate. The findings of this study suggest that if given ballistic gear, the majority of EMS professionals would respond to an active shooter incident if escorted by law enforcement as part of an RTF. Most EMS professionals, if escorted by law enforcement as part of an RTF, would not respond if ballistic gear were not provided. It appears that a majority of EMS professionals are willing to put themselves in harm's way by entering a warm zone as part of an RTF if they are simply provided with the proper training and ballistic gear.

Disclosures

The authors have indicated they have no financial relationships relevant to this article to disclose.

Author Contributions

All authors approved the final version of the manuscript.

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