

Medical Provider Ballistic Protection at Active Shooter Events

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ABSTRACT

There is some controversy about whether ballistic protective equipment (body armor) is required for medical responders who may be called to respond to active shooter mass casualty incidents. In this article, we describe the ongoing evolution of recommendations to optimize medical care to injured victims at such an incident. We propose that body armor is not mandatory for medical responders participating in a rapid-response capacity, in keeping with the Hartford Consensus and Arlington Rescue Task Force models. However, we acknowledge that the development and implementation of these programs may benefit from the availability of such equipment as one component of risk mitigation. Many police agencies regularly retire body armor on a defined time schedule before the end of its effective service life. Coordination with law enforcement may allow such retired body armor to be available to other public safety agencies, such as fire and emergency medical services, providing some degree of ballistic protection to medical responders at little or no cost during the rare mass casualty incident. To provide visual demonstration of this concept, we tested three “retired” ballistic vests with ages ranging from 6 to 27 years. The vests were shot at close range using police-issue 9mm, .40 caliber, .45 caliber, and 12-gauge shotgun rounds. Photographs demonstrate that the vests maintained their ballistic protection and defeated all of these rounds.

KEYWORDS: *body armor, ballistics, active shooter, active assailant, mass casualty incident*

Introduction

Active shooter events such as school, workplace, and public venue shootings continue to occur and result in tragic loss of life. These incidents dominate news headlines and, although rare in any given community, they are a major concern to public safety providers in all communities. Historically, the overwhelming majority of these events involve a single assailant (98%) and end violently (e.g., by suicide or initiation of force by law

enforcement) within 12–15 minutes.¹ Based on these data, law enforcement (LE) agencies have nearly universally instituted immediate entry tactics to find the active threat, engage immediately, and stop the killing. Experience shows that waiting for specialized tactical teams to arrive causes undue delays that cost innocent lives.²

A similar change is now taking place in the medical community. As active shooter events continue to occur, the response community has learned through tragic experience that potentially salvageable patients have died because of delays in providing medical care. This, in turn, has been due to the traditional approach of having medical providers stage and wait at a distance until LE officers can ensure the safety of the scene. As this often requires lengthy and intensive searches of the site, these well-intentioned efforts to mitigate potential risks to medical providers have led to delays in care and loss of life in patients with potentially survivable injuries.³

The Committee for Tactical Emergency Casualty Care was the first group to articulate the need to balance the requirements of ensuring the safety of responders and providing lifesaving trauma care to patients in the civilian setting.⁴ Building on the TECC principles and cutting-edge concepts such as the Arlington County, Virginia, Rescue Task Force model,⁵ recent multidisciplinary consensus recommendations such as the Hartford Consensus^{6,7} have called for widespread preplanning and coordination efforts between LE, emergency medical services (EMS), and fire agencies to ensure rapid access, treatment, and extrication of critically injured victims while simultaneously providing for rescuer safety.

These recommendations envision a first wave of LE officers who rapidly progress toward and stop the threat posed by an active shooter (i.e., stop the killing). These are followed by a second wave of small teams composed of armed LE officers escorting medical personnel to provide limited lifesaving treatment and extrication of critically injured victims (i.e., stop the dying). These small teams proceed only into areas that have already been

cleared of active threats by the initial LE responders and they remain under the constant protection of armed LE officers. These principles and recommendations are in concert with current TECC guidelines and consensus recommendations, and have been endorsed by the medical, LE, and firefighting communities.^{6,7}

Although these principles are easy to understand and embrace, the practicalities of implementing these approaches are still being explored and developed in jurisdictions across the country. One of the common concerns raised is that of whether it is necessary to provide ballistic protection (bulletproof vests and sometimes helmets) to all medical personnel who would potentially be called upon to respond to one of these events. Although this may be ideal, the cost to deploy such protective equipment in a timely manner is cost prohibitive in many jurisdictions. For example, equipping Forsyth County, North Carolina, emergency responders with ballistic protective gear has an estimated cost of \$150,000–\$180,000 as a recurring cost every 5 years. Furthermore, mandating the purchase of ballistic protective equipment can sap critical funds that could provide essential medical equipment such as tourniquets and high-yield training in response to active shooter events. We would like to offer two potential solutions to this important issue.

Solutions

EMS personnel need to enter before the entire scene is secured. It is critical to appreciate that the vast majority of these events involve a single shooter and are over in a matter of minutes. As envisioned in the Hartford Consensus recommendations, medical responders will proceed only into areas that have already been cleared of active threats by LE teams and will be escorted and protected by armed LE officers. This represents a low degree of risk and ballistic protective gear is not mandatory for medical responders in this setting. Medical rapid-response teams should understand that, similar to any other scene, the risk of danger or injury is minimal, but not zero. Training programs would address the proper response to unexpected threats (i.e., taking cover while the LE officers engage and address the threat).

The use of ballistic vests that have been decommissioned by LE agencies before the end of their service life should be offered as an intermediate solution. This is likely to be available at minimal or no cost to responding agencies. This approach can be easy to implement as a component of increased coordination and partnership between EMS, fire, and LE agencies. Interagency and interdisciplinary training on coordinated responses to active shooter incidents may facilitate the development and adoption of this new paradigm of response and increase the likelihood of saving lives.

Ballistic vest manufacturers voluntarily meet standards of protection against specific ballistic threats (Table 1) as set by the National Institute of Justice (NIJ).⁸ These manufacturers provide warranties that typically expire after 5 years, leading many LE agencies to have programs to decommission or “retire” body armor from active police duty after that time. However, ballistic vests do not suddenly lose their protective capabilities after this time. To the contrary, although a number of factors, such as heat, moisture, ultraviolet and visible light, detergents, friction, stretching, and age, may all contribute to the eventual decrease in effectiveness of body armor, testing has demonstrated that age alone is a minor contributor to degradation compared with other factors. In short, vests that have met the end of their manufacturer’s warranty period have not necessarily met the end of their useful service life.⁸

Table 1 National Institute of Justice (NIJ) ballistic protection ratings (NIJ Standard–0101.04)⁹

Armor Type	Test Bullet		Bullet Mass (grains)	Reference Velocity (ft/s)
I	.22 caliber LR	LRN	40	1,080
	.380 ACP	FMJ RN	95	1,055
IIA	9mm	FMJ RN	124	1,225
	.40 S&W	FMJ	180	1,155
II	9mm	FMJ RN	124	1,305
	.357 Magnum	JSP	158	1,430
IIIA*	.357 SIG	FMJ FN	125	1,470
	.44 Magnum	SJHP	240	1,430
III	7.62 NATO	FMJ	147	2,780
IV	.30 caliber	AP	166	2,880

*Law enforcement agencies in the United States commonly issue level IIIA soft body armor to patrol officers. ACP, automatic Colt pistol; AP, armor piercing; FMJ, full metal jacket; FN, flat nose; JSP, jacketed soft point; LR, long rifle; LRN, lead round nose; RN, round nose; SJHP, semi-jacketed hollow point; S&W, Smith & Wesson.

The NIJ is clear and unequivocal on this point. In its guide to personal body armor,⁹ which is intended to guide LE agencies issuing protective armor to officers who are expected to face active threats, NIJ authors state:

“Age alone does not cause body armor’s ballistic resistance to deteriorate. The care and maintenance of a garment—or the lack thereof—have been shown to have a greater impact than age on the length of service life of a unit of body armor. Armor that is 10 years old and has never been issued may be perfectly acceptable for use, provided that the rated level of protection is still appropriate for the typical threats faced. Conversely, 2- or 3-year-old armor that has been worn regularly and improperly cared for may not be serviceable.

“It is important for agencies to recognize that a manufacturer’s warranty should not be interpreted as a benchmark for service life. The warranty exists solely to limit the manufacturer’s liability on the product and is not a reflection of the anticipated service life of the product.

“For agencies that determine that it is not feasible to replace armor in accordance with a manufacturer’s warranty cycle, the continued use of serviceable units of armor is definitely better than the alternative—to not wear the armor and have no protection.”⁹

Demonstration

To provide confirmation and a visual demonstration of this concept, we acquired and tested three NIJ Level IIIa ballistic vests that had been decommissioned from police duty, and were 6, 9, and 27 years old. One panel of the 6- and 9-year-old vests was shot multiple times at close range (6 feet) with 9mm, .40 caliber, and .45 caliber handguns, using police duty issue ammunition (Figure 1). The other panel of each vest was shot with a 12-gauge shotgun at the same range using police duty issue buckshot and rifled slug ammunition. The third vest, which was 27 years old, was shot at the same range with a .40 caliber handgun using police duty issue ammunition. The vests were disassembled and examined to determine whether any projectiles penetrated the protective layers. All of the vests successfully defeated all of the ballistic threats without penetration of the protective layers (Figure 2).

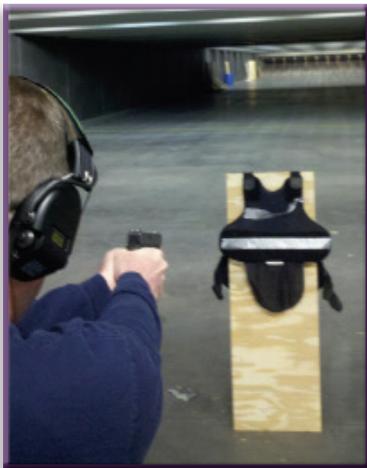


Figure 1
Demonstration setup.

Discussion

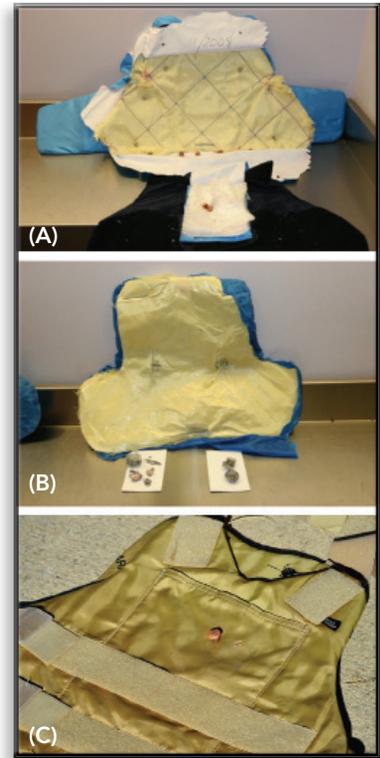
Risk mitigation is a critical component of rescue and medical care in any high-threat environment. There are several strategies to reduce operational risk, including coordination of maneuvers, speed of action, strong tactical movements, overwhelming force, armed escorts, and ballistic protection. It is important to note that ballistic

Figure 2 Results.

(A) A 6-year-old vest that sustained 9mm, .40 caliber, and .45 caliber handgun rounds from 6 ft, with no vest penetration.

(B) A 9-year-old vest, 12-gauge shotgun rounds from 6 ft; 00 buckshot (left) and rifled slug (right), with no vest penetrations.

(C) A 27-year-old vest, .40 caliber handgun round from 6 feet, with no vest penetration.



protection is only one strategy and provides only partial risk mitigation.

Protective equipment including in-date body armor is required for all LE and tactical medical personnel whose duties include entering areas where an active threat is present. However, body armor is not mandatory for medical providers who are providing rapid response to patients in areas that have already been cleared of an active threat and are under armed police escort or protection, as currently recommended.

We do recognize that the availability of ballistic protection may facilitate the development of rapid-response programs at the agency level, where it can serve as one component of risk-mitigation measures, and that body armor may make some individual responders more comfortable and better able to provide care at these incidents. If resources are available, then new body armor that is within manufacturer’s warranty period and custom fitted to individual providers is ideal for agencies that would like to deploy it. If resources for this are not available, then in concert with NIJ data and recommendations, body armor in good condition that has been “retired” from active police duty can be a source of perfectly serviceable ballistic protection at minimal cost in a mass casualty incident or active threat response.

Several possible downsides of using decommissioned body armor have been expressed; these merit careful consideration by agencies that may want to consider

this approach. There are concerns of potential liability to an agency if it provides protective equipment that is no longer within the manufacturer's warranty period. This is specifically addressed and countered in the NIJ publication noted above, and such concerns should be interpreted in light of our first point, that body armor is not required in the circumstances envisioned. Additional concerns have been expressed that some medical personnel could develop an unwarranted sense of protection from such equipment, leading them to proceed into areas that are unsafe. High-fidelity training specific to the response required by the medical teams should address these concerns.

Conclusion

In keeping with current recommendations, body armor is not mandatory for medical responders paired with armed LE teams providing care at active shooter incidents. Body armor in good condition can continue to retain its protective capabilities for many years past the end of the manufacturer's warranty. Although commonly retired from law enforcement use because of age alone, this equipment can provide a significant degree of ballistic protection and is far better than nothing in an environment where threats can arise suddenly. Confirmation and visual demonstration of this principle is provided in this report (Table 2).

Table 2 Highlights

<ul style="list-style-type: none">• Ballistic protective equipment is not provided to many medical responders
<ul style="list-style-type: none">• Body armor is not mandatory for medical responders in a rapid-response role, as outlined in the Hartford Consensus at an active shooter event
<ul style="list-style-type: none">• Retired body armor that has not reached the end of its service life may be an effective and low-cost safety solution for medical providers at these events
<ul style="list-style-type: none">• Three "retired" ballistic vests (aged 6 to 27 years) defeated handgun and shotgun rounds as a demonstration of this concept

This approach may facilitate development and implementation of rapid-response programs, which, in turn, can allow prompt medical care and save lives. If used, ballistic protective equipment should be fielded in a way to make it available to responding personnel in the very early stages of such an event. The possibility of additional threats (additional shooters, explosive devices, and so forth) and other factors affecting rescuer safety should be considered by scene commanders before deploying rapid-response teams, with or without body armor. Ultimately, there is no one-size-fits-all approach. The best solution should involve layers of protection and be determined at the local level by individual jurisdictions and agencies.

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Disclosures

The authors have nothing to disclose.

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