

Don't Let the Word "Myopic" Blind You

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The *Journal of Trauma and Acute Care Surgery* article out of George Washington University titled, "The Profile of Wounding in Civilian Public Mass Shooting (CPMS) Fatalities" is currently one of the most hotly debated academic articles in the tactical community.¹ The article uses some provocative language that reflects the authors' passion and frustration at the lack of data to inform public policy decisions. Thankfully, it has sparked motivation to solve some of the data collection challenges plaguing the civilian healthcare and prehospital systems. However, the unfortunate use of the word "myopic" in the article to describe some of the current initiatives may have blinded some readers to the authors' actual conclusions.

As the current past chairman of C-TECC and the co-chair of the American College of Emergency Physician (ACEP) High Threat Emergency Casualty Care Task Force, I have had the opportunity to discuss this important, though significantly limited, article with a wide range of professionals. The authors' actual conclusion seems to be that hemorrhage control is a critical first step in high-threat response but, in isolation, may not be sufficient to significantly reduce mortality in these events. Based on the data available to the authors, here is what they concluded about civilian wounding patterns and hemorrhage control:

1. **Wounding patterns are different between combat and public mass shootings.** Civilian practitioners have always suspected this from informal conversations and after action reports: Committed killers in close quarters shooting people without body armor globally results in different injury patterns than a gunfight between warriors in body armor on the battlefield. This article provides some data to support this understanding but, more importantly, highlights the unacceptable difficulty in obtaining accurate data to produce evidence-based guidance for our responders. The idea that civilian wounding and mortality patterns differ from combat is not new and has been reported previously in the law enforcement line of duty deaths.²⁻⁴
2. **CPMS case-fatality rates are higher and potentially survivable wounds less frequent than in combat.** Eastridge et al.⁵ reported that 24.3% of battlefield deaths were potentially survivable compared with 7% in this study. As in combat, the explanation for this estimate is likely multifactorial, but is consistent with point 1—in the civilian setting, this study found a higher rate of ballistic injuries to the torso and head/face.
3. **Hemorrhage control is important, just not enough.** From the article's conclusion, "Does this mean external hemorrhage control for civilians is unimportant? Emphatically no! tourniquets and simple hemorrhage control measures *most definitely* [emphasis added] have a role in improving survival, but should no longer be the myopic focus of first responder and public education." This view is consistent with the TECC and TCCC guidelines. It is consistent with the Ranger First Responder Program and the National TEMS Initiative Core Competencies. If it were not, neither TECC nor TCCC guidelines would discuss chest seals, needle chest decompression, damage control resuscitation, hypothermia prevention, and rapid movement of casualty to definitive care as important considerations/interventions.
4. **An ongoing comprehensive preventable death analysis that includes survivors needs to be performed and laws must change in order to get accurate data.** Currently, the complex and restrictive state and local laws restrict researchers' access to autopsy data and to deidentified, national trauma databank data. In order to create evidence-based recommendations and adequately prepare our communities, this must change.

Based on the data available and understanding the limitations of this study, these conclusions should not be controversial. Most informed readers understand that the conclusions of this article are also limited by the fact that this is a retrospective autopsy study with significant data gaps. Further, many readers agree and will argue that despite these flaws, this article is a critical first step toward understanding the evidence gap in civilian public

mass shootings. This work, like the work of Holcomb, Eastridge, Kotwal, and others did for the military, has the potential to drive evidence-based response to high-threat incidents.⁵⁻⁷ In fact, the ACEP Task Force in partnership with the ACS COT is using the Smith et al. article as support to call for a comprehensive national preventable death analysis of high-threat civilian mass casualties (e.g., active shooter incidents, civilian public mass shootings and targeted acts of terror).

Unfortunately, I have also recently listened to a small group of learned and influential individuals speak about the damaging nature of this article. In the same breath, they bring attention to the methodological flaws of the trial (which are clear and not insignificant) and concurrently argue that this one study will somehow threaten everything that has been established in civilian high-threat response. Anchoring on the word “myopic,” they argue that the article will be used to counter calls for prehospital tourniquets and unravel all ongoing national hemorrhage control initiatives. These individuals state with certainty that medical directors across the nation will cite this article in support of removing tourniquets from EMS, Fire, and Law Enforcement. In essence, they are arguing that medical directors will blindly change their practice based on a flawed interpretation of a flawed study. This line of reasoning ignores and undermines the significant professionalization that has occurred in the EMS subspecialty including the recent move to create an American Board of Emergency Medicine certification process. Further, it suggests that professional medical directors will use this faulty interpretation of a single study to counter position statements from their own national professional organizations, including the American College of Emergency Physicians (ACEP), the American College of Surgeons (ACS), the National Association of EMS Physicians (NAEMSP), the National Association of EMS State Officials (NAEMSO), the National Association of EMTs (NAEMT), the National Tactical Officers Association (NTOA), the International Association of Fire Fighters (IAFF), as well as the Federal Fire Administration, Federal Emergency Management Agency, and the Department of Homeland Security (DHS). Fortunately, there is no objective, or even anecdotal, evidence to support this position. In fact, since the electronic publication of this article, states such as North Carolina have expanded prehospital hemorrhage control programs, now outfitting all Highway Patrol officers with the lifesaving tourniquets.

Some have also used the authors’ disclosed affiliations to argue against TECC, the current civilian standard for high-threat response.⁸⁻¹¹ First, it is important to note that this article represents academic research from George Washington University faculty; it is not a C-TECC article.

C-TECC has an executive board and a voting committee that are responsible for the organization’s messaging. Second, as most know, the open-source TECC, which is based on the highly successful military TCCC recommendations, places a heavy emphasis on rapid hemorrhage control. TECC guidelines, like TCCC, are both evidence-based (when evidence is available) and best practice/consensus. Both sets of guidelines support early and aggressive hemorrhage control as part of a broader system to reduce potentially preventable mortality. Comprehensive TECC-based response systems have been implemented across the nation. And in places such as Virginia, Indiana, and North Carolina, it has been used to justify tiered high-threat prehospital trauma-response initiatives such as law enforcement tourniquet programs.¹²⁻¹⁶ The TECC guidelines have gained such wide support that this May, representatives from ACEP, NAEMSP, NASEMO, SOMA, NTOA, and NAEMT voted in support of TECC as the core medical domain for the National TEMS Core Competency Domains.¹¹ Primary source information to inform honest discussion and counter any influence operations can be found at c-tecc.org or on pubmed.com. Alternatively, any interested individual can attend the next C-TECC meeting that will be held at the Governor of Virginia’s High-Threat Response meeting in December 2016.

In my opinion, the only component of the article that is inaccurate is the statement that “[the results] . . . bolster our concern that current, TCCC based recommendations will not impact outcome in civilian active shooter events.” This sentence was likely meant to address TCCC-influenced, hemorrhage-control ONLY initiatives. I suspect it was targeted to groups who claim that they “do TCCC,” but, really, they only do CAT/SOFTT-W and Combat Gauze, neglecting the other critical components such as management of airway and chest trauma as well as damage control resuscitation. Regardless, the statement in the article is misleading and should be addressed in a response from the authors.

There should exist no doubt that hemorrhage control remains a critical component of civilian high-threat response both during active shooter incidents and “routine” operations. Tourniquets are a great tool; put them on high and tight and get the victim to the trauma center. Hemorrhage control is easy to teach and well-designed programs will have a major return on investment in terms of lives saved. But, prehospital systems must do more than stop the bleeding. This is the conclusion of the “Smith Paper,” of C-TECC, of CoTCCC, and even of the Hartford Consensus. We must continue to ask hard questions and look critically at the results. We must have passionate and informed debates. However, to attack a researcher for asking the question is intellectually dangerous and not in our community’s best interest.

References

1. Smith ER, Shapiro G, Sarani B. The profile of wounding in civilian public mass shooting fatalities. *J Trauma Acute Care Surg.* 2016;81:86–92.
2. Mark AC, Wimberger N, Sztajnkrzyer MD. Incidence of tension pneumothorax in police officers feloniously killed in the line of duty: a ten-year retrospective analysis. *Prehosp Disaster Med.* 2013;27:94–97.
3. Sztajnkrzyer MD. Tactical medical skill requirements for law enforcement officers: a 10-year analysis of line-of-duty deaths. *Prehosp Disaster Med.* 2010;25:346–352.
4. Fisher LA, Callaway DW, Sztajnkrzyer MD. Incidence of fatal airway obstruction in police officers feloniously killed in the line of duty: a 10-year retrospective analysis. *Prehosp Disaster Med.* 2013;28:466–470.
5. Eastridge BJ, Mabry RL, Seguin P, et al. Death on the battlefield (2001–2011): implications for the future of combat casualty care. *J Trauma Acute Care Surg.* 2012;73(Suppl 5):S431–S437.
6. Holcomb J, Caruso J, McMullin N, et al. Causes of death in US Special Operations Forces in the global war on terrorism: 2001–2004. *US Army Med Dept J.* 2007;24–37.
7. Kotwal RS, Montgomery HR, Kotwal BM, et al. Eliminating preventable death on the battlefield. *Arch Surg.* 2011;146:1350–1358.
8. Department of Homeland Security. Active shooter how to respond. October 2008 1. <http://www.fbi.gov/about-us/cirg/active-shooter-and-mass-casualty-incidents/run-hide-fight-video>. Accessed September 11, 2016.
9. Fisher AD, Callaway DW, Robertson JN, et al. The Ranger first responder program and tactical emergency casualty care implementation: a whole-community approach to reducing mortality from active violent incidents. *J Spec Oper Med.* 2015;15:46–53.
10. Schwartz R, Lerner B, Llewellyn C, et al. Development of a National Consensus for Tactical Emergency Medical Support (TEMS) training program: Operators and medical providers. *J Spec Oper Med.* 2014;14:122–138.
11. Pennardt A, Callaway DW, Kamin R, et al. Integration of tactical emergency casualty care into the National Tactical Emergency Medical Support Competency Domains. *J Spec Oper Med.* 2016;16:62–66.
12. Callaway DW, Robertson J, Sztajnkrzyer MD. Law enforcement-applied tourniquets: a case series of life-saving interventions. *Prehosp Emerg Care.* 2015;19:320–327.
13. [http://www.nvcja.org/home/tabid/40/ctl/viewdetail/mid/393/itemid/1656/d/20160930/-ONLINE-Tactical-Emergency-Casualty-Care-\(TECC\).aspx](http://www.nvcja.org/home/tabid/40/ctl/viewdetail/mid/393/itemid/1656/d/20160930/-ONLINE-Tactical-Emergency-Casualty-Care-(TECC).aspx).
14. Robertson J, McCahill P, Riddle A, Callaway D. Another civilian life saved by law enforcement-applied tourniquets. *J Spec Oper Med.* 2014;14:7–11.
15. <http://www.iafc.org/IAFC-position-Active-Shooter-and-Mass-Casualty-Terrorist-Event>.
16. <http://services.prod.iaff.org/ContentFile/Get/17073>.

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