

Journal of Trauma and Acute Care Surgery

The Profile of Wounding is Civilian Public Mass Shooting Fatalities: Response to Letter --Manuscript Draft--

Manuscript Number:	
Full Title:	The Profile of Wounding is Civilian Public Mass Shooting Fatalities: Response to Letter
Article Type:	Letter to the Editor
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Manuscript Region of Origin:	UNITED STATES

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4 Dear Dr. Moore:
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7 We thank the JTACS for promoting further debate regarding pattern of fatal wounding
8 and optimal methods to improve survival following civilian mass public shooting (CPMS)
9 events. This issue requires ongoing careful study in order to allow evidence-based guidelines and
10 policy changes to be promulgated.
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18 We are grateful for the letter written by Sztajnkrzyca et al. However, we feel that the
19 authors are extrapolating from too many disparate sources and failing to understand the
20 conclusion of our paper. First, our study makes no reference to blast injuries. Thus, the data
21 presented should not be used to argue for or against any treatments following this mechanism of
22 injury. Second, the authors repeatedly extrapolate the utility of extremity tourniquets after CPMS
23 based on combat medical data. As stated in our paper and acknowledged by the authors in their
24 letter, these two scenarios have very little in common. There is no published study to suggest that
25 military wounding patterns are similar in any way to civilian wounding patterns. Unlike
26 civilians, military personnel wear body armor to protect the torso and head, thus radically
27 changing the pattern of fatal injuries. Furthermore, combat wounds are largely the result of blast
28 injury whereas CPMS events consist entirely of high velocity ballistic wounds. Additionally, the
29 closer engagement distance in CPMS translates into better accuracy and a higher instance of
30 center mass wounds involving the head and torso. Third, the authors cite 2 examples of
31 successful use of tourniquets following CPMS. We have two comments on this: first, we applaud
32 the use of the tourniquets in these events and readily admit the possibility of selection bias in our
33 study. However, this potential bias is not large because the majority of the CPMS events
34 included in our study were prior to the ubiquitous use of tourniquets in prehospital operations.
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4 of civilians with wounds that were not amenable to hemorrhage control by a tourniquet (the
5 denominator). Ironically, Dr. Sztajnkrycer himself recently published a paper showing that only
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7 0.6% of law enforcement officers killed in the line of duty died from an isolated extremity
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9 wound¹. Thus, the authors' own paper and experience validate our conclusion: whereas there is
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11 most definitely a role for hemorrhage control and the use of tourniquets, this modality should not
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13 be the only medical intervention that is emphasized following CPMS events. A myopic focus on
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15 hemorrhage control, while imparting a great effect in combat, will unfortunately not have the
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17 same effect on mortality in CPMS events and may provide the public with a false sense of
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19 security.
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27 It is axiomatic that a hazard vulnerability analysis of the civilian sector in the United
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29 States would find that the probability of a mass casualty, active shooter event far outweighs that
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31 of a blast injury whereas the opposite is true in the European countries mentioned by the authors.
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33 Despite this, we specifically write that our paper should *not* be construed to suggest that
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35 tourniquets have no role in the civilian sector. Quite the opposite – we firmly state and believe
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37 that tourniquets and other simple hemorrhage control measures have a role in improving survival
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39 following CPMS events. However, a tourniquet should be considered to be merely one tool in a
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41 bundle of interventions geared treatment of victims of civilian public mass shootings as
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43 stipulated in the Tactical Emergency Casualty Care (TECC) Guidelines^{2,3}. Congruent with the
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45 authors' recommendation of “diesel fuel” as the best life-saving fluid, the TECC guidelines call
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47 for empowering and training civilian first care providers on basic airway management as well as
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49 hemorrhage control (akin to what has been done in countless CPR courses for decades), rapid
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51 evacuation of wounded to medical care, and improved communication with first responders to
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53 signal for help². The TECC guidelines were created based on the pivotal work of the Committee
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4 on Tactical Emergency Casualty Care using an evidence-based, data-driven approach⁴. There are
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6 examples where simple medical training has been implemented, teaching citizens and police
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8 officers hemorrhage control AND the simple stabilizing interventions of basic airway
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10 management, body positioning, hypothermia prevention, and efficient patient movement that the
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12 authors claim to “require training above and beyond that routinely available to the civilian lay
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14 provider”⁵.
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20 The authors repeatedly point out that our study did not include results of patients who
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22 survived mass shooting events. We agree. Our study was solely designed to describe the nature
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24 of injuries in patients who died following CPMS events similar to the analysis done by the
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26 military that defined the pattern of injury upon which much of the current military tactical
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28 combat casualty care recommendations have been built. Our intention was to describe the pattern
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30 of fatal wounding in civilians in order to determine the opportunities for rescue: namely, what is
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32 the incidence of patients who are potentially survivable using tourniquets or other interventions
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34 following CPMS events. This is a fundamentally different question that what Sztajnkrycer et al.
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36 ask in querying about survivors of CPMS.
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42 Lastly, Sztajnkrycer et al. also point out that our study utilized only 22% of the overall
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44 fatally injured persons in the FBI and New York Police Department databases of public mass
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46 shooting events. We acknowledge this shortcoming in our manuscript as well and use it as a call
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48 to expand access to research. Despite filing Freedom of Information Act requests for 2 years, we
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50 were only able to obtain information on 12 out of 56 events. This number must improve if we
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52 wish to use data to guide policy, and we thank the authors for agreeing with us on this point as
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54 well.
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In conclusion, we thank both the JTACS as well as Sztajnkrzyer et al for continuing this dialogue and look forward to continuing our work in this arena with the hopes of providing our colleagues and our policy makers with the data needed to implement cogent and effective strategies to mitigate death following CPMS events.

E. Reed Smith, MD

Geoff Shapiro, EMT-P

Babak Sarani, MD, FACS, FCCM

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8 **REFERENCES:**
9

- 10
11 1. Sztajnkrycer MD. Tactical medical skill requirements for law enforcement officers: a 10-
12 year analysis of line-of-duty deaths. *Prehosp Disaster Med* 2010;25:346-52.
13
14
15 2. Callaway D, Bobko J, Smith ER, Shapiro G, McKay S, Anderson K, Sarani B. Building
16 community resilience to dynamic mass casualty incidents: A multiagency white paper in support
17 of the first care provider. *J Trauma Acute Care Surg* 2016;80:665-9.
18
19
20 3. Callaway DW, Smith ER, Cain J, Shapiro G, Burnett WT, McKay SD, Mabry R. Tactical
21 emergency casualty care (TECC): guidelines for the provision of prehospital trauma care in high
22 threat environments. *J Spec Oper Med* 2011;11:104-22.
23
24
25 4. Callaway D, Smith E, Cain J, McKay S, Shapiro G, Mabry R. The Committee for
26 Tactical Emergency Casualty Care (CTECC): Evolution and application of TCCC Guidelines to
27 civilian high threat medicine. *J Special Operations Medicine* 2011;11:84-9.
28
29
30 5. Pelinka LE, Thierbach AR, Reuter S, Mauritz W. Bystander trauma care--effect of the
31 level of training. *Resuscitation* 2004;61:289-96.
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