VIEWPOINT

No Drift

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Drift: deviation from a true representation, or reading; especially*: a gradual change in the zero reading in any quantitative characteristic that is supposed to remain constant*
Merriam-Webster Unabridged Dictionary

There should be no drift from commitment to military trauma care and combat casualty care research. An abundance of articles in the lay press have recently described the heroic efforts made to save shattered lives and limbs following the explosive events at the Boston Marathon on April 15, 2013.[1-3] Recognition of the extreme burden of injury stemming from malicious acts on US soil provides sage perspective on the value of medical advances made during war and their translation to civilian trauma care.[4-7] The burden of injury resulting from the improvised explosive devices in Boston, Massachusetts, underscores the importance of the military's experience in managing and researching complex blast injury. The nation's investment in combat casualty care research since 2001 has resulted in the most advanced trauma system in history and the lowest case fatality rate recorded in war.[8] Equally relevant today, the results of military trauma research have translated life-saving lessons into civilian practice.[6] More than ever, there should be no drift from the nation's commitment to military trauma care and combat casualty care research.

Fiscal challenges including indiscriminate funding reductions, withdrawal of troop formations from Afghanistan, and bureaucratic inertia threaten to diminish the military's core mission of trauma research. The wars in Afghanistan and Iraq and events on US soil have laid bare the essential link between military research and advances in trauma care. Even in austere times, the military remains uniquely obligated to maintain its commitment to trauma research as a matter of national security and well-being.

While the noninjured military population requires investment in mental and physical health, these programs are advanced by nonmilitary research funders. The National Institutes of Health applies more than $30 billion annually on the cause, diagnosis, and treatment of an array of diseases including cancer, heart disease, and neurologic disorders. The Centers for Disease Control and Prevention is appropriated more than $10 billion each year to promote health, prevent disease and injury, and prepare for emerging health threats including infectious diseases. Finally, private foundations support research on diseases such as diabetes, obesity, mental illness, and infectious disease. To be sure, advances that stem from these institutions uphold the health of the civilian population but they also advance care of the uninjured military force. Strikingly, however, none of these entities dedicate significant resources to researching trauma such as that seen on the battlefield or following the bombings of April 15.

A decade of war and the sacrifices of a generation have taught that the nation should not rely on nonmilitary entities to advance trauma research especially that required to optimize survival following explosive injury. The gap in funding for civilian trauma research has been documented for decades. Reports by the National Research Council (1966), the National Institutes of Health (1994), and the Institute of Medicine (1999 and 2007) have all cited a need for increased funding for civilian research. These reports have called for the formation of a National Institute for Trauma, but little funding has been appropriated, and no such federal institute has been established. Despite being identified by the Agency for Healthcare Research and Quality as the second most expensive public health problem facing the United States (ahead of cancer, mental illness, and diabetes), funding for trauma continues to lag.

Funding aside, the content of civilian research is not rooted in the severity of injury encountered following improvised explosive devices. Since 2001 it has been shown that survival and recovery from these complex injuries requires systematic investment into specific elements of the continuum of trauma care including point of injury, patient movement, damage control surgery, burn and intensive care, and restorative surgery. This same spectrum of care is required to save the lives of civilian bystanders and law enforcement members injured by explosions or mass shootings. Military combat casualty care research has a proven apparatus for this research and to drift from it would seem imprudent at this time.

Led and funded by the military, civilian institutions must continue to play the role of expert partner and mentor with this research program. Foremost, collaboration with civilian centers able to perform research is needed as a matter of expediency. Simply put, civilian partners provide expertise for aspects of basic research as well as a larger capacity for clinical trials. Second, interaction with civilian academic organizations by military researchers must be supported to scrutinize combat casualty care research, process, and results. Open and transparent review of such research at scholarly meetings is necessary to validate findings and promote translation of results into civilian trauma care.

As the nation looks to bind its wounds from war and now improvised explosive devices on US soil, it would be wise to pay heed to lessons learned. Especially in fiscally austere times, emphasis must remain on the military imperative of combat casualty care research. Focus on this clarion mission will avoid drift and assure that any proposed peace dividends are measured not just in monetary terms but in saved and improved lives of those injured on the battlefield and on the streets of this country.

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ARTICLE INFORMATION

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REFERENCES

1. Lloyd J. Emergency tourniquets, war lessons saved lives in Boston. *USA Today* website. http://www.usatoday.com/story/news/nation/2013/04/17/tourniquets-emergency-boston/2091079/. Published April 18, 2013. Accessed December 4, 2013.

2. Murphy T. How bombs in Iraq saved lives in Boston: 10 years of IEDs and shrapnel wounds taught surgeons critical lessons about trauma—and tourniquets. *Mother Jones* website. http://www.motherjones.com/politics/2013/04/how-war-terror-helped-boston-keep-its-death-toll-down. Published April 18, 2013. Accessed December 4, 2013.

3. Haelle T. From Baghdad to Boston: war lessons on amputations help blast victims walk again. *Scientific American* website. http://www.scientificamerican.com/article.cfm?id=war-lessons-on-amputations-help-victims-walk-again. Published April 17, 2013. Accessed December 4, 2013.

4. Borgman MA, Spinella PC, Perkins JG, et al. The ratio of blood products transfused affects mortality in patients receiving massive transfusions at a combat support hospital. *J Trauma*. 2007;63(4):805-813.

5. Propper BW, Rasmussen TE, Davidson SB, et al. Surgical response to multiple casualty incidents following single explosive events. *Ann Surg*. 2009;250(2):311-315.

6. Elster EA, Butler FK, Rasmussen TE. Implications of combat casualty care for mass casualty events. *JAMA*. 2013;310(5):475-476.

7. Kragh JF Jr, Walters TJ, Baer DG, et al. Survival with emergency tourniquet use to stop bleeding in major limb trauma. *Ann Surg*. 2009;249(1):1-7.

8. Rasmussen TE, Gross KR, Baer DG. Where do we go from here? preface: US Military Health System Research Symposium, August 2013. *J Trauma Acute Care Surg*. 2013;75(2)(suppl 2):S105-S106.