

STN Position Statement: Supporting a National Trauma Care System

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Abstract in Support of a: National Trauma Care System

Currently there is a great disparity of quality trauma care and outcomes among injured Americans. Mass causality incidents and increasing foreign and domestic threats generate scenarios that bring urgency to create a systematic transition of wartime lessons to civilian trauma systems. Trauma is the number one cause of years of productive life lost before the age of 75 and the leading cause of death up and until age of 45. As a nation, \$670 billion dollars are lost in productivity and medical expenses. Of those 30,000 annual deaths due to trauma, 20% are potentially preventable. (The National Academies of Sciences, Engineering and Medicine)

Delivery of optimal trauma care is a critical means of preventing unnecessary death and disability. This can be achieved through a joint military and civilian approach coordinating government, private and academic trauma systems to create a National Trauma Care System. Shared trauma data, research and knowledge for performance improvement at the provider, facility and system levels leads to dissemination of best practices. Use of critical knowledge and best practices grounded in sound learning health system principles applied across all phases of trauma care delivery through consolidated leadership greatly benefits both civilian and military trauma care.

Improving trauma care requires partnership across military and civilian sectors. A reachable goal of zero preventable deaths after injury with the highest possible recovery and outcomes after trauma is the goal for this effort envisioned by dedicated leadership in a National Trauma Care System.

Discussion

Development of a national trauma system has garnered global interest. Haiti evaluated their ability to care for the injured based upon locations of resources in urban and rural areas (McCullough, et al., 2016). These authors discussed the equipment including transport, medical staff, types of injuries and variation in training and medical resource preparation. Scotland considered creating a National Trauma Care System by looking at resources for facilities that were identified as an emergency department, a trauma center that treated at least 240 severely injured patients or a major trauma center, treating between 400 to 650 severely injured patients (Jansen, Morrison, Wang, He, Lawrenson, Hutchison & Campbell, 2015). They developed a mathematical model to create a national standard of triage for air or ground ambulances to arrive to the optimal trauma treatment facility. An older, but significant paper out of Israel involved 7,423 severely injured trauma patients that were mapped and transported to high level trauma centers with coordinated efforts by pre-hospital personnel. The result contributed to a decrease in mortality as described by Peleg, Aharonson-Daniel, Stein, Kluger, Michaelson, Rivkind & Boyko (2004). In the U.S., there are various state designations and for higher level trauma centers the American College of Surgeons (ACS) provides trauma center verification and oversight to continually strive for excellence (ACS, 2014).

Kotwal, Howard and Orman (2016) reviewed the data of over 20,000 injured U.S. military soldiers injured in Afghanistan. They compared several factors including time from injury to definitive treatment or arrival at a combat support hospital by helicopter in less than 60 minutes, early transfusions of blood and hemorrhage control. The authors found that time between combat injury and definitive care with skilled providers in less than 60 minutes had a positive impact on mortality and morbidity (Kotwal, Howard & Orman, 2016).

Norton and Kobusingye (2013) highlight the impact of the traumatic injuries with all ages including our growing aging population, who have significant future consequences for the individual, families and society. This is a concern; for trauma impacts those not only during the initial phases of their injury, but has long-term consequences such as future productivity, depression, post traumatic stress disorder (PTSD) and function with activities of daily living. The authors assert the need for a collaborative approach with pre-hospital providers providing rapid, efficient care to the right type of center that can deliver effective resuscitation, hemorrhage control with adequately resourced staffing and equipment, early rehabilitation and application of discharge needs. This model includes rehabilitation as a critical component of the trauma system and emphasizes that access to all elements in this chain is necessary for a successful National Trauma Care System (Norton & Lobusingye, 2013).

Rhee, Joseph, Pandit, Aziz, Vercruyssen, Kuvatunyou, Friese (2014) emphasize the tsunami of aging adults and the impact of trauma morbidity and mortality in the United States. With the cost of healthcare and the increasing numbers of injured patients, this calls for an intentional evaluation of trauma care. Rhee, et al., (2014) evaluated data from the Web-based Injury Statistics Query and Reporting System (WISQARS) database of the Centers of Disease Control and Prevention between the years of 2000-2010. While deaths from cancer and heart disease has decreased, trauma deaths have increased for those 25 years and older with the highest level in the 50 – 60 year old cohort. According to the data from 2014, trauma was the leading cause of death for those less than 47 years old and more than double that of cancer and heart disease combined (CDC WISQARS, 2016). The highest mortality occurred in those between 50 and 69 years of age. These concepts support a National Trauma Care System that could dramatically aid in decreasing mortality if done with extraordinary planning, resources, collaboration and evaluation of current and future needs (Kanakaris & Giannoudis, 2011).

Currently, the United States trauma system as a whole is fragmented and incomplete (Ronald M Stewart, 2016). The benefits of consistency in a National Trauma Care System will be one of the most important components, and will help to decrease fragmentation. Delivering high quality care in all communities will allow for patients to receive optimal care and treatment of traumatic injuries. Mortality rates decline in the presence of a consistent trauma care system.

In addition to improving care, cost savings have been demonstrated in reliable trauma care systems. Funding for National Trauma Care Systems needs to be prioritized. Unfortunately, creating a standardized trauma care system in all parts of the country

would be initially costly and that prioritized funding may not be enough. Healthcare costs continue to rise, and the cost of caring for trauma patients is not immune to that notion. Policymakers need to be aware of the benefits a National Trauma Care System would provide; including saving lives from unintentional injury.

At this time, trauma centers must comply with multiple sets of rules. Rules written by the American College of Surgeons Committee on Trauma (ACS-COT), the Department of Health and Human Services (HHS), and individual state regulations have posed challenges to trauma systems nationwide. Constructing a National Trauma Care System would create a consistent slate of regulations of which all trauma centers would follow. Currently there is no consistency established in the United States regarding trauma care because these regulations reside in concert with each state, and the ACS-COT.

Keeping trauma care resources in areas that need them most will allow for a standardized trauma care system to fully impact the community they serve. Funding for such a system will stabilize the inconsistent world of trauma care and support the sustainability of trauma centers. Adequate funding for a National Trauma Care System would also keep trauma centers from downgrading or reducing resources for the populations they serve. Many trauma centers are lacking adequate funding for staffing, training, and updated equipment. Centralizing trauma care on a national level will improve the system by creating ways to fund trauma care on a national level and at the same time optimize care while easing the burden of costs in trauma centers that may be struggling to operate.

The collaboration between trauma care providers and trauma centers would help unite the effort of delivering high quality trauma care across the United States. Not only would a National Trauma Care System enhance care in the community, a National Trauma Care System would ensure that quality improvement processes are consistent between trauma centers. Best practices would be shared easily between trauma centers, data would be more efficiently compiled and disseminated through the system which would facilitate setting evidence informed standards to be followed across the United States.

In conclusion, the benefits of a National Trauma Care System would outweigh the challenges faced during implementation. Consistency in care, increased collaboration between trauma centers, increased data sharing, and collective best practices and quality assurances measures, would all make trauma care stronger in the United States.

The Society of Trauma Nurses supports:

- 1- The creation of a National Trauma Care System with the purpose of ensuring quality trauma care is consistent for the communities served.
- 2- Funding a National Trauma Care System so facilities in both rural and urban settings can be successful.

- 3- Training and education for trauma care providers.
- 4- The collaboration between trauma centers and state trauma systems by sharing of trauma data, best practices, and policies.
- 5- One consistent minimum set of regulations so all trauma centers are following the same guidelines.

Resources:

National Trauma Care System Presentation via National Academies of Sciences, Engineering, and Medicine.

<http://www.nationalacademies.org/hmd/Reports/2016/A-National-Trauma-Care-System-Integrating-Military-and-Civilian-Trauma-Systems.aspx>

A National Trauma Care System: Integrating Military & Civilian Trauma Systems
<https://www.youtube.com/watch?v=nFGDdup40Fc>

Recommendations for a National Trauma Care System from IAEMSC 2016 (JEMS).

<http://www.jems.com/articles/2016/12/recommendations-for-a-national-trauma-care-system-from-iaemsc-2016.html>

References:

American College of Surgeons Committee on Trauma, Resources for the Optimal Care of the Injured Patient. Retrieved from:

<https://www.facs.org/~media/files/quality%20programs/trauma/vrcresources.ashx>

Centers for Disease Control and Prevention, Injury Prevention and Control: Data and Statistics. Retrieved from: <https://www.cdc.gov/injury/wisqars/fatal.html>

Jansen, J. O., Morrison, J. J., Wang, H., He, S., Lawrenson, R., Hutchison, J. D., & Campbell, M. K. Access to specialist care: Optimizing the geographic configuration of trauma systems. *The Journal Of Trauma And Acute Care Surgery*, 2015; 79(5), 756-765. doi:10.1097/TA.0000000000000827.

Kanakaris, N. and Giannoudis, P. "Trauma Networks: Present and Future Challenges." *BMC Medicine* 9 (2011): 121. PMC. Web. Accessed January 24, 2017

Kotwal RS, Howard JT, Orman JA, et al. The effect of a golden hour policy on the morbidity and mortality of combat casualties. *JAMA Surg* 2016; 151: 15-24.

McCullough C, DeGennaro V, Bagley J, Sharma J, Saint-Fort M, Henrys J. A national trauma capacity assessment of Haiti. *The Journal Of Surgical Research* [serial online]. March 2016;201(1):126-133. Available from: MEDLINE Complete, Ipswich, MA. Accessed January 23, 2017

National Academies of Sciences, Engineering and Medicine. A national trauma

care system: integrating military and civilian trauma systems to achieve zero preventable deaths after injury. Washington, DC:National Academies Press, 2016.

Norton R, Kobusingye O. Injuries. *N Engl J Med* 2013; 368: 1723-30.

Peleg K, Aharonson-Daniel L, Stein M, Kluger Y, Michaelson M, Rivkind A, Boyko V, Israel Trauma Group. Increased Survival Among Severe Trauma Patients The Impact of a National Trauma System. *Arch Surg*. 2004;139(11):1231-1236.
doi:10.1001/archsurg.139.11.1231. Accessed January 23, 2017

Rhee P, Joseph B, Pandit, V, Aziz, H, Vercruyse, G, Kuvatunyou, N., Friese R. Increasing trauma deaths in the United States. *Annals Of Surgery* [serial online]. July 2014;260(1):13-21. Available from: MEDLINE Complete, Ipswich, MA. Accessed January 24, 2017