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A Lessons-Learned Legacy

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The combat casualties of war have always provided society with substantial advances in knowledge and care of injury. The casualties of Operations Iraqi Freedom (OIF) and Enduring Freedom (OEF) are no exception. A serious sampling of the lessons learned from caring for these wounded soldiers and Marines and subsequent research initiatives are published in this Supplement to the *Journal of Trauma* as a result of the endeavors of the young healthcare teams at the vanguard. Many of these scholarly dispatches were created and completed in the war zone. We should all appreciate and respect their contribution and recognize the birth of a new generation of trauma expertise. To fully comprehend this achievement, however, it needs to be placed in some historical context.

After lessons learned in World War I had been relearned and integrated into combat casualty care in the second half of World War II, the died of wounds (death after reaching a physician-staffed medical treatment facility) rate fell substantially. This was sustained with further improvements in care in Korea and Vietnam. In the latter conflict, 153,303 Americans were seriously injured and 58,209 were killed,¹ with 16,592 deaths in 1968 alone.² During that conflict, the Army Chief of Staff, General Creighton Abrams, ordered a detailed evaluation of weapons effectiveness and dispatched seven teams to gather tactical, weapon, and wound information. This Wound Data Munitions Effectiveness Team (WDMET) database contained 7,989 combat injuries, about a 5% sample of those seriously injured in Vietnam.³ Despite its purpose—assessment of weapons effectiveness—and the fact that it has been sparsely studied, the WDMET database has driven a lot of combat casualty doctrinal thinking since that time.

The knowledge, systems of care, and clinical approaches from Vietnam were transported to civilian trauma settings in the United States starting in the early 1970s. Many surgeons who had been deployed in Vietnam found their way into academic and nonacademic civilian practice and brought their “lessons learned” with them. They, in turn, seeded a generation of trauma surgeons who ushered in an unprecedented era of advancement of scholarly approaches to systems and outcomes for civilian trauma care. However, this knowledge garnered in the late 1970s and

1980s did not flow back into the military, where, ironically, peacetime allowed the core military medical competence in combat casualty care to languish. This was a source of concern to many because a core clinical competency was in a state of neglect and Department of Defense research dollars were being vectored to communicable disease and other areas.

The ramifications of this were not fully comprehended until the first Gulf War in 1991, when concerns about US military medical capability came to the forefront, prompting a series of Congressional investigations.^{4–7} During the 1990s, military leadership, particularly that of General James Peake, Captain Frank Butler, Colonel Clifford Cloonan, Colonel Craig Llewellyn, and General PK Carlton, among others, took steps to rectify the situation.⁸ It is because of these efforts that the state of military medical readiness was vastly improved by the turn of the millennium and for the ensuing conflicts: OIF and OEF. As always, there was a learning curve, e.g., not deploying tourniquets, but the case fatality rate for combat injury in OIF is the lowest ever recorded.⁹

This Supplement to the *Journal of Trauma* is of real importance in the pursuit of military medical readiness and the efforts of the military leadership and young clinicians and researchers must be applauded. Not only are they documenting their experiences for posterity, but they are driving a research agenda and clinical practice that will affect trauma care for at least the next 25 years. Furthermore, this effort to bring scholarly scrutiny to the complexities of management of combat trauma provides a service to trauma surgery that has little precedent in the past 50 years and opens a new era of academic study of combat trauma.

Documenting/databasing combat casualty experiences is immensely difficult, both because the injuries largely include massive, complex, multisystem trauma that is the hallmark of improvised explosive devices now responsible for some 70% of combat injuries and deaths; and because the “fog of war” finds its way into the system of care. That these challenges have been recognized, responded to, and surmounted and that the young front-line surgeons have been supported with analytical, statistical, and mentoring capability are successes that should not be understated. The fact that these young front-line teams are now eager to analyze their data, place their analyses in appropriate context, and begin to share their experiences, is an important step forward for trauma care in general. Efforts are in place

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to collect near-census-quality data on severe injuries through the Joint Theater Trauma Registry and the Navy/Marine Combat Trauma Registry, and to perform complete analyses of autopsies performed on every US combat-related decedent. Tools are being developed to analyze combat injuries, the process of care, and the therapies and outcomes that will drive research agendas and clinical practice in the next several decades. As surgeons, we all appreciate our colleagues in arms; as trauma professionals, we are probably only beginning to see how much more we should appreciate them.

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