

# SAVING LIFE



Illustration and graphic courtesy of North American Rescue

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# AND LIMB

OCTOBER 3, 1993—the Battle of Mogadishu, Somalia. The date stands as a historical landmark that ignited a revolution in casualty care and the lifesaving equipment carried on the battlefield.

Long before the movie *Blackhawk Down* chronicled the sacrifice of the brave soldiers on that fateful day, U.S. Special Operations Command was actively engaged in after-action reviews of the actual event to find ways to optimize casualty care during tactical operations. The hard lessons learned, not only from this incident, but from a long history of casualty data as far back as the Civil War, made the compelling argument that the *right* medical interventions administered at the *right* time could have a significant impact on decreasing preventable combat deaths. The breakthrough paper that resulted was published in a 1996 issue of *Military Medicine* and ushered in the dawn of Tactical Combat Casualty Care (TCCC).

TCCC launched a total reassessment of best practices in casualty management on the battlefield because of the penetrating wounding patterns found there. With 60 percent of preventable combat deaths identified as extremity hemorrhage, 33 percent as tension pneumothorax—a life-threatening chest injury—and 6 percent as airway obstruction, TCCC shifted the treatment priority from the standard pre-hospital protocol of airway management first to controlling the massive hemorrhage due to extremity trauma. This change meant that something as simple as applying a tourniquet could potentially save many lives on the battlefield. Military research began to focus on identifying a standard-issue tourniquet that was safe, effective, easy-to-apply and ruggedized for austere environments.

In 2004, the U.S. Army Institute of Surgical Research (USAISR) conducted a study of seven commercially available, off-the-shelf tourniquets for their effectiveness in stopping blood flow with the least amount of pain during application. Three of the seven were 100 percent clinically effective in occluding blood flow. However, USAISR recommended the C-A-T as the primary battlefield tourniquet based on its overall performance—less painful, easier to use, as well as smaller and lighter than the other tourniquets evaluated. The Committee on Tactical Combat Casualty Care reviewed this study and recommended the C-A-T as the tourniquet of choice. U.S. Special Operations Command followed suit and began issuing the C-A-T as part of the Tactical Combat Casualty Care Transition Initiative into the special

operations community. In 2005, based on these same findings, the Army Surgeon General also selected the C-A-T for issue to *every* deployed U.S. troop.

As data has continued to stream back from the battlefield, the positive outcomes from the use of tourniquets is no longer just a clinical hypothesis, but rather a measurable reality. In 2008, a study of battlefield data from a combat support hospital in Baghdad published in the *Journal of Trauma* validated the earlier USAIR conclusions. The C-A-T was identified as “the best combat tourniquet” and more effective in real-world situations by a 13-point difference—20 percent better—compared to other tourniquets used on the battlefield—thus improving survival rates for casualties experiencing major extremity hemorrhage. In 2011, another study published in *Military Medicine* further validated the earlier studies and continued to hail the U.S. military’s primary tourniquet, the C-A-T, as the safest and most effective combat tourniquet requiring 30 percent less pressure to achieve success. Time after time, study after study, its superior mechanism—an inner band—has shown the right amount of force to stop bleeding and minimize the damage to underlying tissue.

Currently in its sixth generation of production, and crafted from scientific input, battlefield data and direct customer feedback, the C-A-T is clearly playing a major role in reducing preventable battlefield deaths.

To further prove the lifesaving value of TCCC and this simple piece of equipment, war fighters credit the tourniquet with saving more lives on the battlefield than any other procedure or device. A recent study published by Deputy Command Surgeon Colonel Russ S. Kotwal, M.D., U.S. Army Special Operations Command and others, showed that the U.S. Army 75th Ranger Regiment was able to attain a 100 percent successful elimination of preventable deaths from battlefield casualties by employing three principles—training according to TCCC guidelines, the proper medical equipment and the underlying support of command endorsement.

With a tourniquet on every soldier, the potential to save lives is no longer exclusive to the role of the medic. That capability is exponentially multiplied across the board. It is no wonder that more soldiers are coming home alive than in any other time in history. ★

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## 3 Leading Causes of Preventable Combat Death

