

# Bridging Science and Practice—A Case Study: The Military Translation of Innovative Responses to Urgent Military Medical Needs Into Widespread Clinical Practice

*Author Commentary*

## CHAPTER ABSTRACT:

Armed conflict requires the Department of Defense's Military Health System to consider new ways to assess and implement approaches to combat injuries for which older methods prove to be inadequate. This chapter highlights the many developments that have already been incorporated into civilian practice, and demonstrates that a focused, empirical approach may offer an alternative means of carefully evaluating novel modalities where randomized controlled trials are impractical.

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Writing this chapter forced me to think in more depth than I had before about the enormous array of clinical research that is conducted in the Department of Defense. That research covers a broad spectrum of issues, some of which are particular to the military, but much of which are relevant to the civilian world. The other thing that struck me is the talented group of people conducting research across the military.

One instructive message from the chapter is the need to be adaptive in how a research agenda is shaped to address truly critical problems. One particular example is the joint theater trauma registry. When I was learning surgery, the idea that you would use a tourniquet to stop hemorrhage in an extremity was considered an absolute anathema because of earlier experience leading to limb loss. But in studying experiences around injuries caused by improvised explosive devices, researchers found that stopping hemorrhage by use of a tourniquet was an absolutely essential part of immediate care. Another example is in the way that laboratory values for resuscitating trauma patients using old models of saline solution and whole blood proved to be out of date, at least in dealing with patients who manifested massive hemorrhage.

Neither the tourniquet nor the change in the resuscitation paradigm was subjected to a prospective, double-blind, randomized controlled trial. In field medicine, there simply isn't time for that. But there was a constant, iterative process with feedback that does provide solid and convincing evidence about the appropriate way to proceed. That tells me that clinical investigators need to think of approaches to research questions that go beyond what we were always taught as a gold standard—the prospective, randomized, controlled trial. I think adaptive approaches to urgent clinical problems are essential.

Further, our chapter suggests that leaders have to be willing to consider research approaches that go beyond the traditional ones, and to think creatively and innovatively—always being cognizant, of course, of both ethical and legal requirements.

Finally, I hope that this chapter will help readers who are in civilian institutions to understand that there is a very vibrant and responsible clinical research community in the military, and that it welcomes partnerships with civilian institutions and researchers.

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