

An example of Air Force supported SBIR/STTR technology that has been transitioned into an Air Force or other DoD system or subsystem or used by Air Force test ranges and facilities or maintenance depots.

SBIR Topic Number:
AF05-051

SBIR Title:
Novel Methods for
Delivery of Lifesaving
Fluids and Medications

Contract Number:
FA8650-06-C-6614

SBIR Company Name:
VidaCare Corporation
San Antonio, TX

Technical Project Office:
AFRL Human
Effectiveness
Directorate, Wright-
Patterson AFB, OH



VidaCare's EZ-IO® Intraosseous Infusion System

Small, Lightweight Vascular Access Device Saves Lives

- The Air Force needs a novel method of delivering lifesaving fluids, blood products, and medications to patients in austere environments in cases where standard intravenous access is difficult or not feasible
- Under this SBIR project, VidaCare developed the EZ-IO® intraosseous (IO) infusion system which quickly penetrates adult bone to establish an IO port in a person's shoulder, shin or ankle, allowing medical personnel to deliver lifesaving fluids
- The EZ-IO® is currently in use in many hospitals and emergency medical services around the world, and has been used to save soldiers' lives in Iraq
- VidaCare has received numerous awards and accolades for its innovative technology, with the EZ-IO® being named as the country's top innovation in the Wall Street Journal's 2008 Technology Innovation Award competition and VidaCare receiving the Tibbetts Award for its outstanding SBIR achievements in 2007

Commercialization Pilot
Program Series

RHOPSEC114

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DISTRIBUTION A:
Approved for public
release; distribution
unlimited.

Air Force Requirement

Rescuers of wounded military personnel often need to establish intravenous access in order to administer lifesaving treatments including intravenous fluids, blood products, and medications. When a patient goes into severe shock the veins frequently collapse, causing standard intravenous access procedures to be difficult or impossible.

The Air Force and the other military services need a novel method of delivering lifesaving fluids, blood products, and medications to patients in austere environments in cases where standard intravenous (IV) access is difficult or not feasible.

SBIR Technology

This SBIR project with VidaCare leveraged an existing powered intraosseous (IO) device, the VidaPen, an IO auto-injector, which allows for rapid administration of drugs and fluids into the IO space. The IO space (bone marrow cavity) directly connects to the central circulation. Later, another IO device, the VidaPort, was developed and later renamed the EZ-IO®.

The EZ-IO® drill is a lightweight, battery-powered system that quickly penetrates adult bone to establish an IO port in a person's shoulder, shin or ankle, allowing medical personnel to deliver lifesaving fluids when a victim's veins cannot support traditional IV access.

A second device—a disposable, manually inserted needle—was designed primarily for Air Force pararescue jumpers (PJs) who need an extremely small, lightweight device. Using the same drill-tipped hollow needles or catheters, it can be carried alone or as a back-up to the EZ-IO® and—unlike its predecessors—does not need a special extraction tool. It can be used in the sternum in addition to the shoulder, shin and ankle.

Using either tool, rescuers can access a bone's marrow or IO space, which acts as a large vein where blood flows even during shock or trauma when peripheral veins often collapse.

Transition Impact

The EZ-IO® device is now making a difference in military medicine. Medical devices for battlefield medics must be small and lightweight. In combat conditions, much time is often spent (or lost) attempting to gain vascular access in an injured soldier. With the EZ-IO®, medics can quickly stabilize a soldier's condition to permit time-critical transport to a forward surgical hospital.

The EZ-IO® is currently in use in many hospitals and emergency medical services around the world, including 50 countries. Success of the EZ-IO® has been demonstrated in the current conflict in Iraq.

VidaCare has received numerous awards and accolades for its innovative SBIR technology, to include:

- VidaCare's EZ-IO® device was named the country's top innovation in the Wall Street Journal's 2008 Technology Innovation Award competition. The Journal selected Vidacare's innovative technology from among 700 entries in its eighth annual competition for a gold award.
- VidaCare is a 2007 recipient of the Tibbetts Award. The prestigious, national Tibbetts awards are made annually to those small firms, projects, organizations and individuals judged to exemplify the very best in SBIR achievement.
- The EZ-IO® device was selected as a winner of the 2005 Medical Design Excellence Awards (MDEA) competition, the premier awards program for the medical technology community

Company Impact

The progress and resultant products were the direct result of the Phase I and Phase II awards from the Air Force SBIR program. The SBIR program allowed Vidacare to greatly improve upon an established concept in emergency medicine (intraosseous vascular access), and to develop the novel EZ-IO® approach into several different devices for use in the military, pre-hospital and emergency medicine environments. As a direct result, increased sales for Vidacare's products have grown exponentially.

Dr. Larry Miller, co-founder of VidaCare, has adapted the technology for other uses, including making excruciating bone marrow biopsies less painful



SBIR/STTR

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