



Patience, persistence, and creativity make USAMRDC's Body Cooling System a T2 success story

Civilians as well as warfighters can now benefit from the U.S. Army Medical Research and Development Command's (USAMRDC) system for treating exertional heat illness, thanks to T2 perseverance and a smart "reboot" for a stalled license negotiation.

The USAMRDC's Body Cooling System (BCS), called the Arm Immersion Cooling System under its original patent, is a lifesaving device that is used to treat overheating of the body. Due to a variety of factors (e.g. exertion, environmental conditions, fitness level, illness, toxins) human core body temperature can rise to levels that are harmful or fatal.

The BCS provides a simple mechanism by which the core body temperature of up to six standing individuals, or one immersed individual, can be relatively quickly and safely decreased at any time in almost any situation. A person suffering from overheating can lean into the BCS's raised basin of cool, yet relatively comfortable water, to submerge their arms from the elbows down. Blood near the skin's surface rapidly cools and circulates throughout the body, dissipating excess body heat and dropping core body temperatures in minutes.

Quick and effective treatment can help avoid the costs associated with more extensive treatment and hospital stays. The BCS can increase the overall capacity for people to work in hot, humid environments by as much as 60%. The system takes up little space, is easy to set up and transport, is adjustable and low-tech, requiring only water and ice to operate.

The true essence of the tech transfer excellence in this success story revolves around the steadfast determination of the inventor and T2 staff to get the lifesaving Body Cooling System into widespread use.

Licensing inventions sometimes requires the maturation of the technology, including field testing to reduce the level of associated risk. The T2 mechanism by which USAMRDC started the process was a Commercial Evaluation License to First Line Technology (FLT) in 2014. Those negotiations stalled, but the USAMRDC's tech transfer innovation continued.

At the 2019 Emergency Medical Services conference, USAMRDC and CrowdRX formed a cooperative research and development agreement (CRADA) to field test the BCS at five large outdoor summer concerts. For the CrowdRX staff, who regularly deal with patients with extremely high (over 107°F) body temperatures, the technology provided a much-needed new method for body cooling.



Above: The basin of the Body Cooling System holds up to 48 gallons of water and is large enough to immerse an individual suffering from exertional heat illness.

A key outcome of the CRADA relationship included the BCS being successfully used for two seriously overheated individuals who might otherwise have died. In addition, USAMRDC received proof of concept, critical feedback about product improvements, and convincing evidence of an unexplored emergency personnel market.

These factors resulted in a second-generation design and strongly contributed to breaking the impasse with the prospective licensee FLT, which designs and manufactures disaster preparedness and emergency response equipment—a perfect fit for the BCS. The CRADA with CrowdRX ended in September 2019. In 2020, FLT reopened negotiations for the BCS and entered an exclusive patent license agreement for the widespread commercialization of the BCS for sports teams and emergency personnel.

In addition to the CRADA, two internal use agreements enabled field-testing at military events and training facilities. All three of these agreements provided data and pushed improvements to the technology, leading to the execution of the patent licensing agreement between USAMRDC and FLT. ❖